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VOLUME IV.

(JANUARY TO JUNE)

EIGHT PLATES WITH TWENTY-FIVE FIGURES AND THIRTEEN ILLUSTRATIONS IN THE TEXT

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THE SCOTTISH
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ON SOME CASES OF ABDOMINAL ABSCESS TREATED BY INCISION AND DRAINAGE

By JOSEPH BELL, M.D., F.R.C.S.Ed.,
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IN the peaceful old days, when certain books or parts of books were prescribed for the University preliminary examination in Latin, a friend of mine, whose memory was good though his classical knowledge was defective, thought he would make his examination safe by learning by heart a translation or crib for the most dangerous book, the *Ars Poetica*. He came to grief in the end and even incurred the suspicion of copying from a concealed book by making the sad mistake of beginning his translation two lines before the prescribed passage. This parable may stand as an indication of what happens to the best educated surgeon in certain cases. He knows everything the text-books can tell him of the symptoms of disease, and once the diagnosis is complete, the treatment follows as a matter of course. This knowledge serves him in ninety-nine out of the hundred cases, but in the remaining one, somehow, the symptoms do not tally, and where to begin his treatment is the difficulty.

In every branch of the surgical art, anomalous cases which refuse to be ticketed under any special class do turn up. Probably such cases occur in surgical more rarely than in medical work, but in abdominal surgery, every experienced surgeon will allow, such cases are by no means infrequent. While the great majority of cases of obstruction and distension can be classified under appendicitis, volvulus, intussusception, or result of malig-

nant disease causing strictures; and their diagnosis is fairly certain and their treatment may go on *secundum artem*; there is a residuum of cases not so easily diagnosed or classified, and in which in consequence the treatment is apt to be less certain. The reflex irritations from passage of hepatic or renal calculi, the vague results of chill which used to bear more blame than they deserve, may explain some cases; others may be explained by traumatism. It is very helpful to read, not of the series of cases in which everything comes out *like a book* and good diagnosis leads on to sound treatment, but rather of the odd cases which don't exactly follow the rule, and where the surgeon has to make his diagnosis as he goes on with his operation.

I venture to record a few cases in which the element of certainty was entirely absent. In some of them a traumatism seemed to be the explanation for the symptoms. They have all occurred in private practice and within the last few years. Curiously enough, three of them occurred in the practice of one very distinguished and experienced surgeon, Dr Stirling of Perth, whose special skill in diagnosis is well known.

I.—Localised Abdominal Abscess the Result of Injury, causing a Peritoneal Hernia.

A. B., aged nineteen—seen with Dr M'Leod of Hawick—a healthy young fellow, spare and muscular, had a week before I saw him, while playing in a football match, felt a sudden intense pain in right iliac fossa. This was at once followed by acute obstruction, constant vomiting of anything taken by mouth; and even rectal feeding was rejected. Abdomen was much distended, tense and rigid, resonant above, with dulness on percussion in R. flank, where also I found tenderness on pressure and a sense of resistance. This was quite behind and above the region of the appendix. Pulse 96, temperature 98. Under chloroform I made a free incision, and after opening fascia transversalis, got into a circumscribed cavity containing over ℥ii of fetid pus. In this cavity lay a loop of small intestine congested and swollen. This swelling was caused by a fibrous band or adhesion about as thick as a goose quill. This on division released the intestine, which I returned, and drained the cavity after partially sewing up the wound. A suppuration with a fecal odour followed for some days, but he made a rapid and complete recovery.

II.—Extra-Peritoneal Abscess result of Injury.

I was asked on July 3rd, 1898, by Dr Stirling of Perth, to see with him a lady, Mrs C. D., who had been very seriously ill with symptoms of peritonitis for seventeen days preceding my visit. The diagnosis was rendered difficult from the fact that she had often suffered from gall-stones, and seven years previously had had her abdomen opened for diagnostic purposes. There was, however, a very distinct history of injury to the part from a fall when attempting to cross a stile a week or two before the symptoms commenced. The abdomen was much distended, and obstruction, though not absolutely complete, was very considerable. There was a large ventral hernia which, however, seemed to have no bearing on the case. Her temperature clearly pointed at suppuration, probably septic. She looked collapsed and was very depressed, and anxious to be allowed to die in peace.

However, Dr Stirling had diagnosed an extra-peritoneal collection of matter from the tension of the wall and dulness with sense of resistance. Assisted by Dr Robert Stirling, while chloroform was given by Dr Stirling, I cautiously divided the different layers of the abdominal wall, and on working through the fascia, got down to a considerable quantity of pus just outside the peritoneum. This membrane was thickened, so after washing the abscess cavity with great caution not to interfere with adhesions, we drained the abscess. The patient made a very rapid and complete recovery.

In this case the diagnosis, entirely due to Dr Stirling, was a very fine one, as the case was much complicated by the previous history and operation. The incision for the relief of the abscess was made considerably posterior and to the right of the original one. In all probability an extra-peritoneal effusion of blood had become the starting-point of the suppuration.

III.—Probable Muscular Over-exertion causing Abscess in Iliac Region behind Peritoneum.

On Sept. 9th, 1898, I saw, with Drs Graham and Stirling of Perth, Master E. F. The history of the case was:—A remarkably muscular lad of fourteen, tall for his age, previously healthy, and accustomed to exercise of all sorts, on 16th August rode on his bicycle six miles on a hilly road, using one

leg only on account of the other crank being broken. He kept up with his companions, but felt the strain severe. After a rest of a day or two he again rode ten miles against a very strong headwind, using both legs this time, but on 23rd August he became very ill—collapsed and exhausted. On 26th August his temperature rose rapidly, without any distinct fall, till at 9 P.M. on Sept. 1st it reached 103·2, from which time the temperature taken every six hours varied from 101 to 103 till the date of operation. At first fears of typhoid were entertained, but there were no other symptoms present, and in a few days there was distinct evidence of some deep-seated mischief in R. iliac region quite behind the appendix area.

On examining him under chloroform administered by Dr Stirling, I was able to make out a distinct sense of resistance below the abdominal muscles and a deep-seated dulness on percussion. I made a deep exploratory incision, vertical, 4½ inches from centre of spine, lower end just above the iliac crest, and on getting through the muscles reached an abscess cavity which must have held at least ℥x of laudable pus free from odour. I enlarged the opening, so as to examine it freely, and searched carefully for any indication of injury to bone. I could feel the transverse processes and bodies of lumbar vertebræ, all apparently healthy. There was nothing to be felt in the ilium nor downwards towards femoral canal. The appendix region as palpated from behind was perfectly normal.

The cavity was washed out, and a large drainage tube inserted. From the moment of operation all went well. The temperature fell to normal and never rose. After some weeks the wound was allowed to heal, and the boy now is quite well.

I cannot help associating the abscess with the severe strain thrown on the psoas and iliacus of the one leg, while riding with only one pedal. Though no exfoliation could be felt, a muscular tear or periosteal laceration may have set up the inflammatory charges which caused the abscess.

I operated a few weeks ago on an enormous abscess in the adductor region, which had been diagnosed as a case of advanced sacro-iliac disease. The origin of the mischief had been a fall with limbs widely apart, and great pain had been felt at the time in the pubic region. After draining it freely, I examined the abscess wall with my fingers, and discovered a piece of smooth necrosed bone about the size of a sixpence

free in the cavity, which had evidently been torn from the pubis at the time of the injury. The patient has made a rapid recovery.

IV.—Large Abscess behind the Gastro-hepatic Omentum, probably the result of Injury, treated by Laparotomy.

Patient, Mrs G. H., æt. forty, had, up to a few weeks before I saw her, been a fairly healthy woman, the mother of three children, the youngest seven years old. No marked abdominal symptoms of any kind, till within last few weeks. She had had a blow on abdomen from the shaft of a dogcart about six weeks previously, had complained of pain, and had been treated by the medical adviser as if it was a neurosis, his diagnosis being hysterical neuralgia of the stomach. Circumstances caused a change in her medical advisers, and for ten days she had been under the care of Dr Stirling and Dr Robert Stirling of Perth. She suffered from intense pain in the gastric region, and for seven days she had persistently vomited all nourishment given by mouth. Bowels had been acted on by enemata, and nourishment given by rectum.

There was no evidence of flatus passing, indeed everything pointed at complete obstruction, and her strength was rapidly declining. While there was no absolute evidence of general peritonitis there was considerable general tension of abdomen, and coils of intestine could be seen in motion. A distinct tumour about the size of a cricket ball could be felt deep in the abdomen, a little to the left of the middle line, and having its centre about the level of the umbilicus.

Feeling that the case was hopeless if left alone, and in the hope that the tumour was an encapsuled hæmorrhage from a gastric ulcer, or something inflammatory, I opened the abdomen by an incision three inches long, and vertical in direction, a little to the left of the middle line, the centre of the incision corresponding with the centre of the tumour. On opening the peritoneal cavity no inflammation of membrane was seen. Getting small intestines out of the way, the gastro-colic omentum presented, evidently thrown forward by the tumour behind it. On opening it cautiously a rounded tumour of considerable hardness and reddish in colour was easily felt and seen. There was a very distinct pulsation communicated from the

abdominal aorta. Bringing it as near to the wound as possible, by pressing the sides of the incision down on each side of it, I cautiously scraped through its vascular wall, and reached some horribly offensive pus. Seizing the edges of the capsule by Pean's forceps, we kept it in the wound, enlarged the opening, thus preventing the escape of any of the pus into the general peritoneal cavity. After emptying it thoroughly and washing it out with a large quantity of hot sterilized water, I put my hand into the cavity, and explored edge of liver, posterior wall of stomach, and up to diaphragm, to try to find any tumour or ulcer that might have caused the mischief. Everything was perfectly healthy, so far as could be felt. I then arranged omentum as far as possible to shut out cavity, and inserted two largest-sized indiarubber drain tubes, each about 4 inches long, one under liver, the other downwards and backwards. I did not think it necessary to make a counter opening behind, but left the wound open. The pus, of which there was at least 20 ounces, was horribly fœtid. So much so that when operation was over we carried the patient to a fresh room and a new bed. After some days of anxiety, on account of her weak condition, the patient made a complete and permanent recovery. I have no doubt that the initial mischief was the blow from the dogcart shaft, which had caused a hæmorrhage in the lesser omentum. The blood had become septic, and a good capsule had shut it out from the general peritoneal cavity.

V.—Empyema opening into Abdomen under Diaphragm opened in R. Loin and Drained. Recovery.

Mrs J. K., æt. thirty-eight, previously healthy, with the exception of carbuncles, the last in December 1897, was seized on January 7th, after a time of intense mental worry, with a severe cutting pain in R. lower costal region. Temperature 102. Pulse 100. This went on with ill-marked physical signs, great emaciation, and continuous jerking temperature for about four weeks; no great dulness. About January 24th pain was felt down thigh when right leg was extended, but no evidence of joint disease nor any pain in groin, also tenderness in eleventh rib began to be felt.

I saw her in consultation with Drs Boyd and Playfair on

February 7th. She was looking frightfully ill and altered in appearance. The temperature was rising, and did not fall to normal at any hour. Her side had been blistered and explored with negative results, and the dulness was not increased. But there was distinct tenderness on pressure on free end of eleventh rib, and there was a distinct broadening and sense of resistance in the R. flank in front of erector spinæ. I diagnosed deep-seated suppuration in psoas region beneath eleventh rib, and on February 11th, assisted by Drs Playfair and Boyd, I cut down underneath eleventh rib, worked in through abdominal wall, behind peritoneum, and at a very considerable depth reached pus, dark coloured and foul smelling, of which I evacuated about a pint. A large indiarubber drainage tube was inserted and wound washed out. From that moment everything went well. The temperature, 103·3 on day of operation, fell with great rapidity, in four days reaching the normal, from which it never rose. The patient made a very rapid and complete recovery.

This case gave great anxiety: there was a tubercular family history, and the physical signs were indefinite. The grave constitutional symptoms were most alarming. Dr Boyd, on whom the responsibility rested, was always convinced that an empyema was present, though repeated explorations failed to reach the matter, which made its way into abdomen, probably along sheath of psoas muscle.

In this case there was no history of injury.

VI.—Obstruction of Bowels. Deep-seated Suppuration in Right Iliac Region. Colotomy. Death.

Mr L. M., a large, powerful, but very fat man, had a paralytic seizure some months previous to the illness for which I was asked to see him. He was a patient of Dr Taylor of Newcastleton, and had been seen in consultation by Dr M'Leod of Hawick.

He had had complete obstruction of bowels, and had been vomiting fæcal matter for nearly a week. Abdomen was enormously distended. Pulse thready and hard, about 120. Temperature subnormal. Injections had failed to do any good. No flatus had passed for four days. Tongue dry. Delirium present.

While the abdomen was generally resonant, except in flanks, which were dull, notably the R., where there was a very distinct sense of resistance and brawny hardness a little behind M'Burney's point; there had been no previous symptoms pointing at malignant disease, and though the age was unusual for an appendicitis, one could not help the diagnosis of a possible gangrenous appendix.

After explaining the very great danger, indeed almost hopeless nature of the case, I made a free incision in right iliac region through the seat of resistance, and found the tissues matted together with considerable sero-purulent effusion. No appendix could be made out. The cæcum, which was enormously distended, presented, so I opened it freely, and filled a large washhand basin with fœtid fæcal matter. Enormous quantity of flatus passed and distension was relieved. Breathing improved, and the patient was quite easy, but he died collapsed, within forty-eight hours of the operation.

In only one other case have I operated for appendicitis in an aged man. He made a complete recovery, and the fœcal concretion was found to contain a grape stone in its centre.

ON CONSTRUCTIVE CHANGES IN THE ANIMAL TISSUES

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Preliminary.

ONE of the most remarkable results of modern chemical investigation has been the demonstration of the great complexity of many of the substances found in connection with protoplasm after it has ceased to live. It is of course impossible to analyse living matter, for so soon as the constant whirl of chemical change which is the basis of its vitality is stopped, it becomes resolved into its various constituents. But since chemistry shows that the composition of one of the chief constituents—the proteids or albuminous substances—has an elementary composition represented by the formula $C_{292}H_{481}N_{90}O_{83}S_2$, we are able to form some idea of the still greater complexity of the substance from which this is derived.

Everyone is familiar with the fact that plants are the great builders of these compounds. The formation of starches $x(C_6H_{10}O_5)$ from the carbon dioxide of the air, and from water, is a well-known example of this, and these starches are again used in the construction of still more complex matters.

The construction of such large molecules is like building a house, and *energy* is required, just as energy is required to put together the stones and mortar. In the case of plants this energy is derived from the sun's rays; the heat and light vibrations of their protoplasm being rendered potential in the construction of the molecules. Thus one great function of plants is the storing of solar energy in their structure.

All animals, either directly or indirectly, feed upon plants. By this we mean get their necessary energy. The plant has stored up energy in its complex molecules—the animal breaks down these molecules, sets free and renders available the energy. In this way starch is broken down into CO_2 and H_2O and the energy stored by the plant in its construction is set free and used by the animal. The process may be compared to the setting free of energy by the breaking down of the molecule of nitro-glycerine when it explodes—$C_3H_5(NO_3)_3O_3$ decomposing into CO_2, H_2O, O. and N. with the liberation of a considerable amount of kinetic energy.

There is thus a perpetual cycle of energy between plants and animals. It is continually rendered potential by the first and kinetic by the second; or, to put the matter in another way, plants may be considered as playing the part of middle-men in supplying energy to animals from the sun.

But while these general laws hold good, it is also true that in plants a breaking-down of complex organic molecules with the liberation of energy goes on, while in animals a building up of these complex substances takes place to a small extent.

With these disintegrative changes in plants it is not my intention to deal at present.

I wish to consider the constructive changes in animals and chiefly in the higher animals.

As regards some of the simpler products of animal life we have long possessed definite evidence of building up, of synthesis. One of the earliest and clearest demonstrations of this was afforded by the researches of Bunge and Schmiedeberg,

which showed that in the animal body benzoic acid $C_6H_5 - CO.OH$ is linked to amido-acetic acid $CH_2NH_2 - CO.OH$ to form hippuric acid $NH(C_6H_5.CO)CH_2.CO.OH + H_2O$. Since these investigations many similar examples of synthesis have been discovered. These I shall not consider at present, and I at once shall pass to the question of whether the more complex molecules, which actually enter into the composition of living animal protoplasm, are not built out of simpler substances.

The synthetic construction of fats was demonstrated by Munk, who found that the animal organism could produce the necessary glycerine and combine it with fatty acids when these are administered alone.

Again, it is well known that when vegetable proteids are eaten these substances are broken down in the stomach and intestine into simpler bodies called peptones, and that when these peptones reach the tissues they are again built up, not into the characteristic albumins of the plants from which they were derived, but into the special proteid of the animal body. Here then is a conclusive example of such synthesis.

In the animal body still more complex materials exist. In the tissues the proteid substances are combined with phosphorus-containing compounds to form *nucleins*, and these phosphorus-containing compounds appear to be essential to the manifestation of vitality.

Evidence of Synthesis.

The question then arises: Are these compounds built up by plants and simply appropriated by the animal body, or are they built up in the animal out of simpler substances?

On this subject a study of the life history of the salmon affords important evidence.

In dealing with this evidence I shall confine myself to a study of the female salmon, since the investigations of the changes in the male fish are not sufficiently extended.

It is well known that the salmon leads a curious dual existence. Part of each year is spent in the sea, where the fish feeds voraciously on herring, whiting, etc., while the rest of the year is spent in rivers and lakes, where the fish deposits its spawn. Here too the earlier stages of its life are passed.

As the salmon passes from the sea and during its sojourn in fresh water, the enormous mass of eggs which it has to

deposit are developed. Some idea of the amount of material accumulated in the growing ovaries may be obtained by comparing the percentage weight of these structures and their contained ova when the fish is leaving the sea and when it has reached the upper part of the rivers and is ready to spawn. In the female salmon leaving the sea in April the ovaries weigh 1·2 per cent. of the total weight of the fish, while in November, just before spawning, they weigh no less than 23·3 per cent. To put this in another way: in a salmon of 100 cm. in length (about 39 inches) the ovaries weigh 121 grm. in April, while in November they weigh about 2230 grm.—2109 grm. having been laid on during these weeks. They have in fact increased in weight about 200 per cent.

Composition of Ovaries.

Before studying from what this mass of material is formed let us first consider of what it consists.

The chief ingredient is a yellow oily fluid which may be readily pressed out of the eggs. This consists chiefly of two important substances.

1. *Fats.*—The ordinary fats are built up from the glycerine molecule $C_3H_5\begin{cases}HO\\HO\\HO\end{cases}$ by replacing the hydrogen atom of the hydroxyl by the radicle of the fatty acids. Thus the most abundant fat of the salmon, olein, is formed by the radicle of oleic acid $C_{18}H_{33}O.OH$ replacing the hydrogen thus—

$$C_3H_5\begin{cases}O.C_{18}H_{33}O\\O.C_{18}H_{33}O\\O.C_{18}H_{33}O\end{cases}$$

But in the ovaries of the salmon the most abundant fat is a yet more complex substance called *lecithin*. In this two of the hydrogen atoms are replaced by oleic acid, while the third is replaced by phosphoric acid, to which is linked a peculiar base called cholin, thus—

$$C_3H_5\begin{cases}O.C_{18}H_{33}O\\O.C_{18}H_{33}O\\O.-PO\begin{cases}OH\\O-C_2H_4-N(CH_3)_3OH.\end{cases}\end{cases}$$

The essential fat of the ovaries is thus a body of very considerable complexity.

2. *Pseudo-nucleins.*—When all the fat and lecithin have been removed from the ovarian fluid, there remains an albuminous substance of peculiar and complex character. In this the molecule of an albuminous body is linked to a phosphorus-containing molecule. Now the molecule of albumin has a probable composition represented by the formula $C_{292}H_{481}N_{90}O_{83}S_2$, and when this is linked to a further molecule, a substance of very large molecular weight and of very great complexity is formed. This body, which is very similar to the albuminous body found in the yolk of the hen's egg, has been called *ichthulin.*

So much for the ova before they are deposited; but after they are deposited and fertilized they undergo development into the young salmon, and in this process of development yet more complex bodies make their appearance, bodies which are essential constituents of all living matter—the true *nucleins.* These consist of a varying amount of albuminous material linked to *nucleic acid.* This substance, when decomposed, is found to be composed of a molecule containing phosphoric acid and various organic bases of considerable complexity. Now since the egg in developing does not take in nourishment from without, this nuclein must be formed from the phosphorus-containing substances already in the egg. We have here again an example of the building of more complex molecules from less complex.

Formation of the Essential Constituents of the Ovaries.

The subject which I shall here consider is the way in which the lecithin and the ichthulin of the ova are formed. Are they taken as such from without, or are they formed in the animal body?

That they are not taken from without is clearly shown by the fact that the salmon during its long sojourn in fresh water does not feed,—that it does not regularly take in a supply of food sufficient to yield the necessary energy and to afford material for the construction of the rapidly growing ovaries. I do not here discuss the question of whether a salmon will or will not swallow a worm or other object while in fresh water. All I desire to contend is, that it does not feed in the sense of taking in the necessary material. The evidence of this seems very conclusive, and a summary of it will be found in a "Report on Investigations on the Life History of the Salmon in Fresh Water," presented to the Fishery Board of Scotland, 1898.

The materials from which the ovaries are built up must therefore obviously be derived from inside the animal.

In investigating how this takes place, the following method of study was employed. During the spring, summer and autumn, a constant stream of salmon is passing from the sea to the head waters of the various rivers. From this upward stream of fish, samples were taken at different seasons from the estuary and from the upper waters of the river, and by comparing the latter with the former, the nature and extent of the changes which had taken place in the fish were determined. The method may be compared to that of taking samples of the water of a river from two points, to determine what changes have taken place between these points. That the fish taken for examination were normal representatives of their class was ascertained by an extended series of observations. In comparing these fish with one another, individuals of very different size had to be dealt with, and for comparison these had to be reduced to some common standard. The most convenient and satisfactory method was found to be to take length as the standard, and to express all measurements and weighings as for fish of 100 cm. in length. Throughout this paper this system is adopted, and all figures give the weight of the various constituents in grammes per fish of 100 cm. in length, unless it is otherwise stated.

An investigation on these lines shows that *the ovaries grow at the expense of the muscles*—as the ovaries grow, the muscles steadily diminish in bulk.

This is clearly demonstrated by the following table :—

CHANGES IN TOTAL WEIGHT

Ovaries

Estuary (May to August)	Upper water (Oct. and Nov.)
202	2230
Increase 2038	

Muscles

6613	4116
Loss 2497	

The loss of weight in the muscle substance is thus more than sufficient to cover the gain of weight by the ovaries.

When we study the gain of *solids* by the ovaries and the loss of *solids* from the muscles, we find that, as the season ad-

vances, the amount of water in the muscles increases, while there is no such increase in the ovaries, and consequently the loss of solids from the muscle is more marked than would be expected simply from their loss of weight.

CHANGES IN SOLIDS

Estuary (May to August)	Upper waters (Oct. and Nov.)
Ovaries	
59	800
Gain 741	
Muscles	
2410	880
Loss 1530	

The loss of solids from the muscles is thus far more than sufficient to make good the gain of solids by the ovaries.

The reason for this apparently excessive loss of material from the muscle is that the muscle substance also yields the necessary energy for the work which the fish has to do. (See Fishery Report, p. 139.)

The ovaries thus feed on the substances stored in the muscles, obtaining from them the material for their growth.

This transference of material from muscle to ovary must be studied more in detail. Do the muscles contain the lecithin and ichthulin required by the growing ovaries, or do they contain merely the necessary chemical elements in some other forms?

Lecithin.

We may first consider whether the muscles contain the lecithin which is laid on by the ovaries. The following figures show that the amount of lecithin gained by the ovaries is far in excess of that lost from the muscles.

CHANGES IN LECITHIN

Estuary (May to August)	Upper waters (Oct and Nov.)
Ovaries	
2·81	66·1
Gain 63·3	
Muscles	
42·6	23·4
Loss 19·2	

The lecithin of the ovaries must therefore have been constructed for some other substance.

(*a*) Lecithin being a fat combined with phosphoric acid and cholin, we may first consider whence the necessary fat is derived. An examination of the muscles shows that an enormous amount of fat is stored in these structures while the fish is feeding in the sea, and that it tends to disappear while the fish is in fresh water.

The following figures show that the fat lost from the muscle is far more than sufficient to yield the fat of the ovarian lecithin.

CHANGES IN FATS

Estuary (May to August)	Upper waters (Oct and Nov.)
Ovaries	
15	204
Gain 189	
Muscles	
770	159
Loss 611	

The enormous excess in the fats lost from the muscles over the fats gained by the ovaries, is used as a source of energy by the fish.

(*b*) We may next consider the source of the phosphorus of the ovarian lecithin.

CHANGES IN PHOSPHORUS

Estuary (May to August)	Upper waters (Oct. and Nov.)
Ovaries	
0·451	10·69
Gain 10·2	
Muscles	
19·5	9·5
Loss 10	

The phosphorus lost from the muscle is thus just sufficient to yield the phosphorus gained by the ovaries. It has been shown that this cannot come from the lecithin of the muscles. The rest of the phosphorus in the muscles is partly in the form of a nucleo-proteid to the extent of about .24 per cent. and partly as some simpler compound of phosphoric acid to

the extent of 57 per cent. It must therefore be chiefly from these last simpler compounds of phosphoric acid that the phosphoric acid of the lecithin is derived.

(*c*) As to the source of the cholin we at present know nothing.

The evidence of the building up a synthesis of lecithin in the ovaries from fats and phosphoric acid is thus very clear.

Ichthulin.

This being a compound of a proteid substance with an organic phosphorus-containing acid, it is therefore necessary to consider the source of both of these materials.

(*a*) *Proteid.*—Since these substances contain a definite amount of nitrogen it is possible by determining the amount of this to deduce the amount of proteid. By this method the changes in the proteids of muscles and ovaries have been studied by Dr Dunlop.

The following table shows that far more proteid is lost from the muscles than is required to yield the proteids of the ovaries.

CHANGES IN PROTEIDS

Estuary (May to August)	Upper waters (Oct. and Nov.)
Ovaries	
36·5	537·5
Gain 501	
Muscles	
1369	706·2
Loss 663	

A series of investigations carried out by Dr Boyd shows that the proteid lost from the muscle is of the nature of a simple albuminous body—a globulin. This in the ovaries must be built up into ichthulin.

(*b*) *Phosphorus.*—We have already seen that the phosphorus lost from the muscles is sufficient to supply all the phosphorus of the growing ovaries. But the evidence as to what kind of phosphorus compound in the muscle is drawn upon for the ichthulin phosphorus must be considered. The ichthulin phosphorus constitutes about 40 per cent. of the phosphorus of the ovaries, and hence in the estuary fish there is in the

ovaries about 0·18 grm. of phosphorus in this form, while in the upper water fish before spawning, there are 4·28 grm.—a gain of 4·10 grm.

In the muscles the nucleo-proteids contain only about 24 per cent. of the total phosphorus, and hence, in the fish in the estuaries, the muscles contain about 7·08 grm. of phosphorus in such combination, while in the upper water fish in November they contain 4·68 grm., so that the muscles lose only 2·4 grm. of their phosphorus in this form. But the ovaries gain 4·10 grm., and hence it must be *the phosphorus in simpler combination in the muscles that is used in the construction of the ovarian ichthulin.*

There is then definite evidence of the synthesis of such a highly complex substance as ichthulin from simpler compounds.

The respective parts played by the ichthulin and lecithin in the development of the phosphorus-containing compounds of the young fish have not been investigated. But in the developing chick of the hen there is clear evidence that the lecithin disappears as the phosphorus compounds of the chick develop. Whether lecithin is a precursor of ichthulin we do not at present know.

Conclusions.

The study of these changes in the salmon thus throws very important light upon the mode of formation of some of the more complex constituents of the animal body and demonstrates the way in which they are built up out of simpler materials.

A full recognition of this is of importance in explaining such changes as the breaking down of proteids to peptones in digestion. The old hypothesis that this was to permit of more ready transudation or absorption seems to be exploded, and the more rational explanation is that to build up its own characteristic proteids the animal requires to work upon the simplest proteid molecule—the peptone.

But the point of greatest importance is that such investigations must make us readjust our conception of the relative activities of plants and animals. It remains true that animals can take the constituents of plants—the proteids fats and carbohydrates, and by breaking them down liberate and set free their energy. But there is a clear indication that in the construction of the animal body, in the construc-

tion of the machine by which this liberation of energy is brought about, synthetic changes occur to a very large extent —that the essential constituents of the animal body are not taken directly from plants but are elaborated from simpler substances.

CASES OF TRICUSPID STENOSIS[1]

By J. MACKIE WHYTE, M.A., M.D.,
Physician to Dundee Royal Infirmary

MRS F., aged thirty-seven, was admitted to Ward VIII., Dundee Royal Infirmary, on October 13th, 1897, complaining of swelling of legs, breathlessness and weakness. She had had rheumatic fever at ten, eighteen and twenty-five; at fourteen she had typhoid fever and was then discovered to have an affection of the heart.

On May 3rd, 1893, she came under the care of Dr Stalker in the Infirmary, complaining of pains in back, abdomen and hips. Examination then showed some cyanosis of face and extremities. Slight œdema of feet and legs. Pulse 88, small, irregular and compressible. Apex beat in left fifth space about ½ inch external to nipple line. Impulse diffuse and heaving. Systolic thrill felt. No epigastric pulsation. Some venous pulsation at root of neck. In mitral area, first sound strongly accentuated, followed by a blowing murmur, and preceded by a diastolic murmur which led right up to it. The pulmonary second was not accentuated in the usual manner of mitral lesions. No enlargement of liver; abdomen very rigid. Slight dyspnœa. Urine 1030, acid, albumen ⅛; amount varying during her stay, between 30 and 50 oz.

After fifteen days these were the heart signs: a systolic murmur alone at apex, preceded by accentuated first and followed by a closed second sound. Over the lower half of the sternum and about an inch to left of it was a slight diastolic murmur following the second sound.

Pains of a rheumatic nature were frequent in right shoulder and hips, often keeping patient awake.

On May 23rd, 1893, she left and appears to have kept pretty well till five weeks before readmission in October 1897, when she had got her feet wet and had an attack of bronchitis

[1] Read at a meeting of Forfarshire Medical Association.

followed by dyspnœa and œdema of feet. She showed the usual restlessness of heart cases and was three times admitted before her death in March of this year. Not to weary you, I shall summarise the copious notes taken by my late able house-physician, Dr A. F. Shoyer.

General condition one of much distress. Cyanosis of face and extremities. Legs easily pitted as far up as thighs. Pulse 100, weak, irregular, intermittent, without the characters of aortic regurgitation. Diffuse heaving over precordial area. Pulsation in veins of neck. Apex beat in fifth left space, 4½ inches from middle line. Systolic thrill at apex. Upper border of cardiac dulness at lower edge of second rib. Right border at level of third rib is 1¼ inches to right of sternum, and at fourth rib 1¾ inches to right of sternum. At apex a loud systolic murmur, a weak first sound, and a second feebly accentuated. Over left fifth costal cartilage, a faint double murmur, like a pure double aortic. A soft diastolic was heard down the left margin of the sternum from the pulmonary area, following a feeble second sound. At times there was heard in the aortic area a double murmur, louder during inspiration, and of a creaking character, suggesting friction. On one occasion, just before leaving hospital, marked pericardial friction was heard in mitral area. When she came back this had gone, but an undoubted to and fro rub was heard for a time to right of sternum, at fourth and fifth costal cartilages. The urine contained abundant albumen.

The usual signs of failing compensation developed, and in spite of cardiac tonics, aspirations of pleural cavities, and Southey's tubes, she gradually sunk.

Post-mortem Examination by Dr Fraser

(*Pathologist to the Infirmary*).

Considerable quantity of clear serous fluid in peritoneal and pleural cavities. Several loose adhesions of lungs to thoracic walls and to pericardium. Just beneath fifth right costal cartilage the inferior anterior angle of the upper lobe of the right lung was united on the one hand to the pericardium and on the other to the diaphragm by bands of connective tissue about ½ inch long.

There were no adhesions of the two pericardial surfaces to-

gether, but visceral pericardium was thickened, and the tip of the left auricle was united to the base of the ventricle by adhesions. *Right ventricle* measured 3½ inches from apex to pulmonary valve. Walls much loaded with fat and thinner than normal. *Right auricle* measured 3¼ inches from its tip to opposite wall and 3 inches in the diameter at right angles to this. Muscle hypertrophied. Pectinati muscles specially prominent. *Left ventricle*—wall averaged ⅞ inch in thickness. Cavity very small, 2½ inches from apex to aortic valve. Musculi pectinati not enlarged but musculi papillares distinctly hypertrophied. Apex of heart consisted entirely of left ventricle for some distance back and had a curious spiral twist. *Left auricle* about normal size, 2½ inches from tip to opposite wall and 2 inches at right angles to this. Inside wall smooth, none of hypertrophy of musculi pectinati found in right auricle. Wall very thin, at places little more than endo- and pericardium. *Mitral valve* crescent-shaped, the anterior cusp being convex, very much thickened, and containing calcareous matter. Opening admitted finger-tip. *Aortic valve* incompetent, contracted, thickened, and surrounded by a few small vegetations. Aorta atheromatous and about 1 inch in diameter. *Tricuspid valve* exhibited a union of edges of flaps, leaving an opening which barely admitted the tip of the finger. No thickening of flaps. *Pulmonary valve* normal. Weight of heart 15 oz.

Lungs collapsed; no consolidations.

Liver nutmeg. Marked cirrhosis. Perihepatitis.

Spleen small. Perisplenitis.

Kidneys cirrhotic.

Brain congested, otherwise normal.

This case has several points in it of deep interest from the clinical and pathological side. Beginning probably as an endocarditis of the left side with the first attack of rheumatic fever when the patient was ten years old, the disease may have been aggravated by the subsequent attacks. The tendency to fibrous formation, so marked in the valves of the heart, is also noted in the cirrhosis of kidneys and liver, not to mention the results of inflammation in various serous membranes. The condition found in the mitral and aortic valves does not call for much remark. The hypertrophy of the left ventricle would no doubt have been much greater had the total quantity of blood expelled in a given time been greater. But the contraction of

the mitral valve effectually limited this. The tricuspid contraction must have acted to some extent beneficially by diminishing the congestion of the pulmonary system of vessels. If we might judge from the character of the changes found *post mortem*, this stenosis must have been of late occurrence. There was no thickening, simply adhesion of edges of cusps. A hint as to the mode of production of this I find in Clifford Allbutt's article on "Disease of the Aortic Area of the Heart" in his System of Medicine. Speaking of the way in which muscular stress may lead to aortic disease, he says, "Roy and Adami noted that 'when the aorta of a dog is suddenly and greatly constricted, and consequently the pressure in the proximal portion of the vessel greatly increased, the plasma of the blood is forced into the cusps of the aortic valves, and vesicles of lymph make their appearance on the under surface in that region where fibroid thickening is most frequent in cases of chronic high arterial pressure.' This," he concludes, "is probably the way in which the chronic inflammation of the tricuspid valve is established, which not infrequently ensues upon mitral stenosis." The contrast between the right auricle and ventricle is worth attention, the former having clearly had excessive work, the latter degenerating in spite of the mitral contraction.

I wish now in a few words to associate some of those pathological conditions with the clinical signs. These latter varied not only during the years the patient was under observation, but even during the weeks of each stay in hospital. During her visit in 1893 there was clear evidence of mitral constriction and regurgitation. The diastolic murmur "over lower half of sternum and about an inch to left of it" probably indicated aortic regurgitation, though I think it possible that it was due to tricuspid stenosis. That this was present at that time is very likely, as the absence of accentuation of the pulmonary second was noted. Now though this negative sign does occur in the latest stages of mitral disease, it is far from common; during the patient's last series of visits I was much struck by it, and the explanation was afforded by the autopsy. The narrow tricuspid valve prevented the occurrence of any great tension in the pulmonary artery. At no time was there heard a murmur in the tricuspid area of a true presystolic character. The diagnosis was correct so far as the mitral and

aortic valves were concerned, but, as often happens, the tricuspid stenosis was not diagnosed.

With this case, which after all is not of so rare a type (for tricuspid stenosis is usually associated with valvular disease of the left side, especially mitral stenosis), let me record the following for the purpose of contrast :—

Helen Tyrrell, aged twenty-one, admitted on July 5, 1888, to East Poorhouse. Had been lying unconscious at the gate when found.

Face congested, hands livid, no radial pulse, jugulars gorged. Heart irregular, a presystolic and systolic mitral murmur. Many coarse crepitations over front of chest. Right border of heart seemed about normal.

Eight ounces of blood drawn from left external jugular, as none would flow from basilic. After this more conscious. A feeble radial pulse now felt.

To have 7 minims strophanthus tincture every three hours.

July 6. — Much wheezing and cough. P. 96 regular. Heart sounds as before. Strophanthus and ammonia carb. thrice daily. Hot poultices to chest. ℥ii whisky daily.

July 9.—Headache. Slight diarrhœa. Consolidation left apex, anter. and poster. with some crepitations.

July 13.—Severe headache.

July 14.—Severe vomiting, headache persists. Sleepless. Takes no food.

July 15.—Died at 9.30 A.M. after complaining of severe pain in back.

Post-mortem exam. showed marked congestion of face, lividity of dependent parts, œdema of legs and slightly of trunk. Right pleural cavity contained about a pint of serum. Extensive pleural adhesions specially on left side. *Left lung* consolidated in upper lobe. Small cavities in it filled with dirty fluid. *Right lung* showed fibrous cicatrices in upper third. Here and there a caseous nodule. Both lungs much congested.

Heart.—All cavities contained blood-clot. Right auricle very greatly distended. Pulmonary orifice seemed healthy. *Tricuspid valve* admitted index finger to first joint, cusps adherent, forming an elliptical orifice, thickened and contracted. No irregularity. No vegetations. *Aortic valve* competent and healthy. *Mitral valve* healthy, admitting two fingers partially.

Wall of left ventricle about half the usual thickness. Marks of old pericarditis in patches.

Liver enlarged, nutmeg.

Spleen and kidneys congested.

Serum in pericardial and peritoneal cavities.

In this case a careful examination would probably have enabled me to localise the murmur to the tricuspid area. But a loud presystolic murmur seemed to call for no extra care in examination.

ON A NEW METHOD OF OBTAINING A BLACK REACTION IN CERTAIN TISSUE-ELEMENTS OF THE CENTRAL NERVOUS SYSTEM (PLATINUM METHOD)

By W. FORD ROBERTSON, M.D.,
Pathologist to the Scottish Asylums

MORE than a year ago, in the course of making some experiments upon the blackening of medullated fibres by means of osmic acid, the reducing action exercised upon this substance by formaldehyde and formic acid was brought specially under my notice. I observed also that pieces of nervous tissue which had been hardened by means of formaldehyde became rapidly blackened when placed in a solution of osmic acid, and that the black reaction was, to a certain extent, selective of the myeline of medullated fibres. It then occurred to me that formaldehyde might be capable of effecting the reduction of the compounds of some other metals besides osmium, and that in the presence of a tissue the localisation of this reduction might be in some degree selective of special elements. I accordingly set up a large number of experiments, placing pieces of tissue which had been hardened in a 10 per cent. solution of formalin (which is a 40 per cent. solution of formaldehyde in water) in solutions of the salts of several of the more easily reducible metals, together with a certain proportion of formalin. The theoretical grounds upon which these experiments were based have been sufficiently justified by the results already obtained. With the salts of three metals, namely, platinum, palladium, and silver, a reduction, to a certain extent selective of special tissue elements, has been found to occur. I wish for the present, however, to deal only with the subject of this histo-

logical use of the first of these metals. Palladium and silver require the fulfilment of special conditions, and my experiments with them are not yet sufficiently complete to justify publication of an account of their results.

The salt of platinum that I have employed is the bichloride. I find that the reaction obtained varies in certain respects in accordance with the proportion of formalin that is added to the platinum solution. Provisionally I recommend that the fluid employed should be made by the addition of 5 per cent. of formalin to a 1 per cent. solution of platinum bichloride. A piece of tissue is placed in about twenty times its volume of this fluid. The bottle should be corked, but not tightly, as it is necessary that air should not be entirely excluded. In from one to three months the piece of tissue begins to blacken. It must, however, be allowed to remain in the fluid for several weeks longer, during which time the process of blackening proceeds so long as any platinum chloride remains.[1] If the platinum chloride appears to be exhausted before the tissue is sufficiently blackened, more may be added. When ready for examination the piece of tissue is placed in dextrine solution for several hours, and then cut into thin sections with the aid of the freezing microtome. These are dehydrated, cleared and mounted in balsam in the usual way. I have, so far, seen no injury of the preparations from the use of a cover-glass. The deposit which forms is evidently what is known as "platinum black," a substance which consists either of metallic platinum, or of an oxide of this metal. The chemical change in the platinum bichloride seems to be dependent upon the presence in the solution of a certain quantity of formic acid, which is slowly produced by oxidation of the formaldehyde. As I have indicated, the black reaction does not occur in a uniform manner throughout the tissues, but selects first certain special elements. The histological picture produced is one which is entirely different from that obtained by Golgi's sublimate and silver methods and their modifications.

Owing to the long time that is required for the carrying out of the method, the amount of material that I have been able to examine by it up to the present is not very large, and chiefly

[1] It seems important that throughout this stage the bottle should be somewhat tightly corked in order to prevent too rapid formation of platinum black, and its consequent precipitation in the fluid.

for this reason I have found it impossible as yet to come to a definite conclusion upon many of the difficult questions suggested by the appearances that the preparations present. But the new view of the structure of the central nervous system that the method is capable of furnishing has seemed to me so full of interest, and in certain respects so important, that I have thought it desirable to publish a short account of the matter without further delay.

The chief structural features revealed by this method may be grouped under four headings, viz.: (1) the presence of fibres in the walls of the intracerebral and medullary vessels; (2) the primitive fibrils of the protoplasm of the nerve cell; (3) the presence of certain granules in the nucleus of the nerve cell; and (4) the existence of special cell elements in the brain. There are also other minor structural features brought out, upon which, however, I do not propose to touch at present.

The fibres in the walls of the vessels constitute at once the most constant and most striking feature presented in preparations of the brain or spinal cord by this method (figs. 1 to 6). They are very numerous in the larger vessels at least, and stand out generally in jet black upon a ground which is either colourless or faintly tinged with yellow or grey. They occur in all the intracerebral vessels, even in the most minute capillaries. Many of them are of a sufficient size to be distinguishable with the low power of the microscope. Others are so minute as only to be recognisable with very high powers. In the larger arterioles they appear as long strands of smooth contour, straight, wavy, or sharply zig-zagged. For the most part they extend in the long axis of the vessel. Sometimes they wind obliquely round it. They form anastomoses with each other, and also divide into branches. The finer fibrils, composed partly of these branches, often form a sort of reticulum or plexus. On each vessel there are generally from one to three fibres, which are much larger than the others (fig. 1). In the smaller arterioles, and in the capillaries, the fibres are as a rule more delicate than in the larger arterioles, although even in the smallest vessels the occurrence of a thick fibre is common. Sometimes only a single strand can be seen upon a capillary, but it seems probable that in such instances the black reaction has been incomplete. In the venules the fibres are in general more delicate than in the arterioles, and anastomose more freely. In almost

every section single fibres may be seen to pass over from one capillary to another adjacent to it. These connecting fibres are generally, though not always, comparatively thick. At the point of their attachment they often present a distinct thickening, beyond which the fibre divides into numerous spreading branches.

What is the essential nature of these fibres? To most histologists the idea will probably at once suggest itself that they are nerve fibres; but this view, fascinating as it is, has really almost nothing to support it. The nerve fibres, which have been demonstrated by Obersteiner (1) and by Gulland (2) upon the pial arterioles by means of Golgi's method, are not brought out, as far as I have been able to ascertain, by this platinum method. On the other hand, the connective tissue fibres of the pia-arachnoid are more or less deeply and uniformly blackened by it. These facts, as well as others that I need not mention at present, induce me to conclude that these fibres are merely the connective tissue fibres of the adventitia. At the same time, it seems certain that they are essentially different from ordinary white fibres and yellow elastic fibres, for neither of these are blackened by the method in a precisely corresponding way in non-nervous tissues. They appear to be a specially modified form of connective tissue fibre, which probably occurs only in the vessels of the central nervous organs, and in their soft membranes. The prolongation of these fibres on to the capillaries is a point of considerable interest, but one that is entirely in accord with facts already known. The writings of Bevan Lewis (3), Obersteiner (4), Lapinsky (6) and others have made the existence of a special adventitial coat in the cerebral capillaries a well-established fact. Nevertheless, although the cellular element of this coat has been easily recognised, the existence of its fibrillar element has hitherto rather been inferred than demonstrated. With regard to another structural feature of the cerebral capillaries, which was first described by Kronthal (5), and which, by many, has since been regarded as satisfactorily demonstrated, the platinum method furnishes, not a confirmation of the statements made, but the clearest proof of their fallacy. Kronthal asserted that he had succeeded in demonstrating the existence of exceedingly fine capillaries in the brain, some of which had a diameter of only 2·5 μ. Lapinsky (6) afterwards described

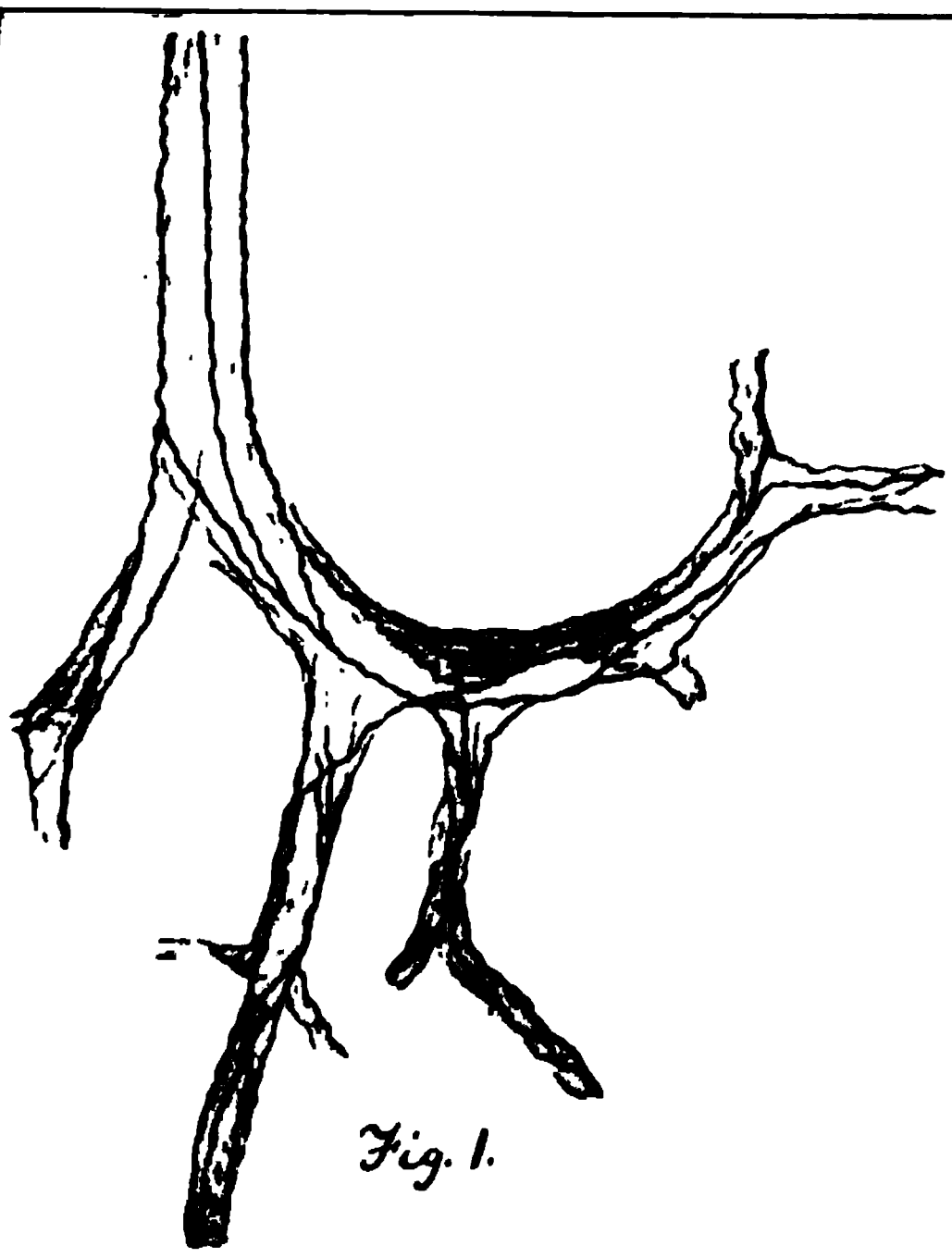

Fig. 1.

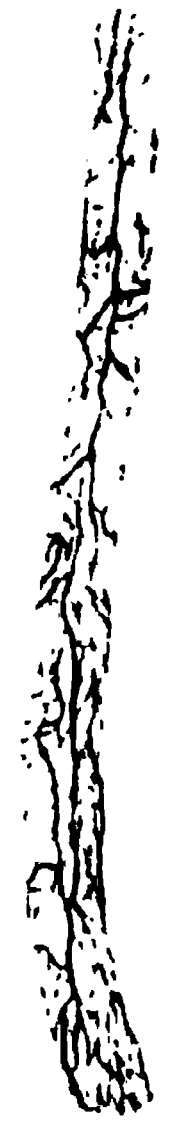

Fig. 2.

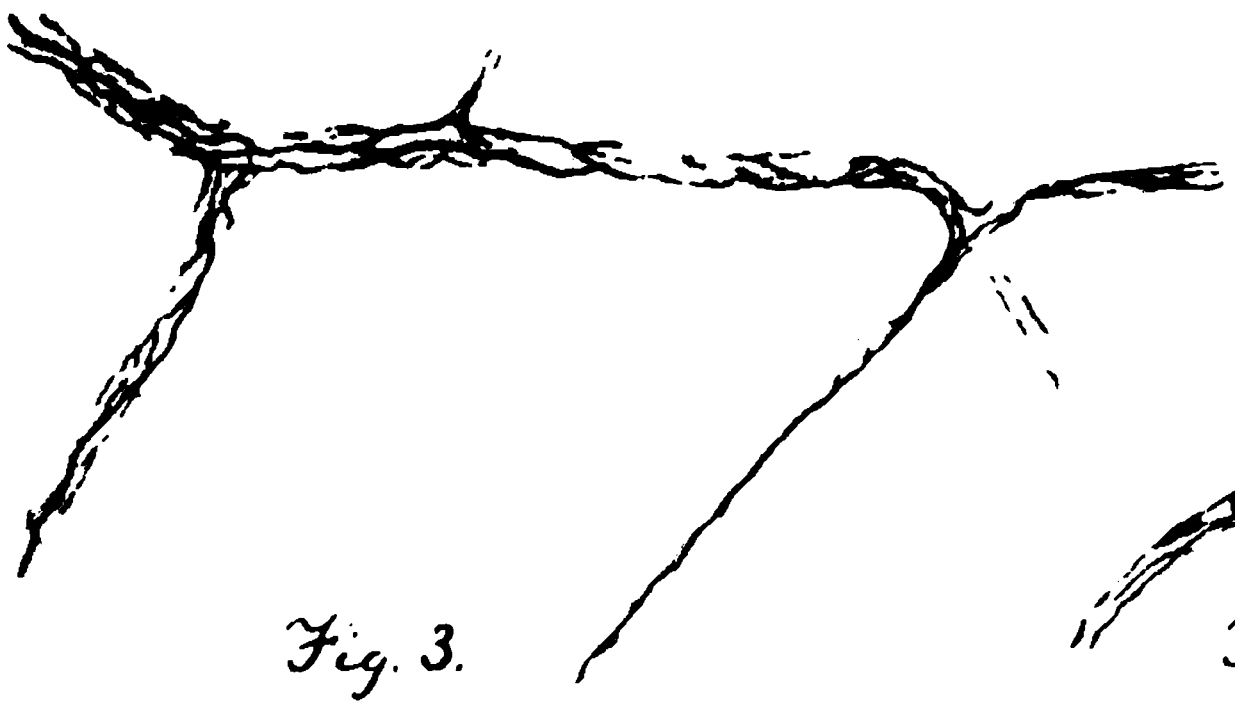

Fig. 3.

Fig 4.

Fig. 5

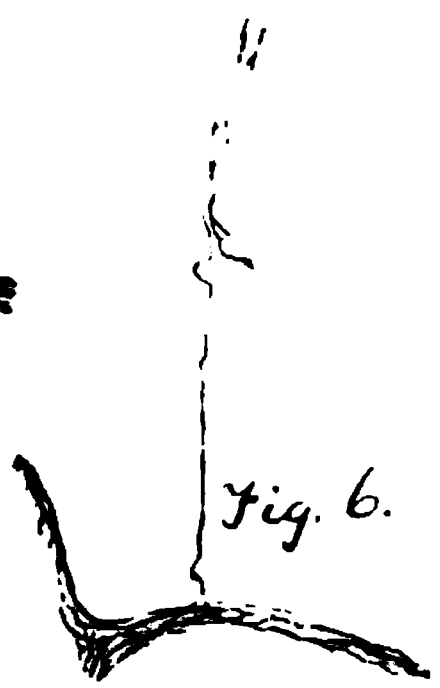

Fig. 6.

PLATE I.—TO ILLUSTRATE DR FORD ROBERTSON'S PAPER.

For description of figures, see page 99

capillaries of still smaller size, some being not more than 1·4 μ in diameter. Preparations by the platinum method show with perfect clearness that no such minute capillaries exist, and that what these observers have regarded as such are really the adventitial fibres which connect and support adjacent capillaries.

The primitive fibrils of the protoplasm of the nerve cells are darkened by the platinum method when the reduction process is carried somewhat further than is desirable for the clear demonstration of the fibres on the vessels (fig. 7). During the last three years these fibrils have received even more attention than the Nissl bodies, and their existence is now a well-established fact. Great difficulty has, however, been experienced in clearly demonstrating them. Quite recently what appears to be a successful elective method of coloration has been devised by Bethe (7). Among such elective methods of staining the platinum method must also be included, as it leaves the Nissl bodies quite invisible. Its evidence is entirely confirmatory of the views that are now held by most authorities on the subject, namely, that while in the processes and near the surface of the cell-body the primitive fibrils form more or less distinct strands, in the deeper portion of the cell-body around the nucleus, they form a network, and that the fibrils composing the axis-cylinder process arise not from the former, but from the latter.

The nuclei of the larger nerve cells in platinum preparations have a very characteristic appearance, enabling one to distinguish them at once from the nuclei of the neuroglia and of the vessels, provided the reduction process has not been pushed too far. This characteristic appearance consists in the presence of from six to twelve relatively large, rounded or irregular, generally evenly distributed, black particles (fig. 8). The nuclear membrane, the nucleolus and intervening threads are only very slightly darkened. What are these blackened particles? In the light of the recent most important work of Giuseppe Levi (8) upon the structure of the nucleus of the nerve cell, the question, it seems to me, can have only one answer. Levi has shown that in the nucleus of the somatochrome nerve cell there is a complete "centralisation of the chromatin." All its elements are acidophile in reaction with the exception of from two to four small semilunar or rounded

particles adherent to the surface of the nucleolus. These are basophile and constitute the whole of the chromatin contained in the nerve cell. Lying between the nucleolus and the nuclear membrane, in addition to certain irregular filamentous elements, there are numerous acidophile particles, some of which may be as large as the nucleolus and which have been described by some authorities as accessory nucleoli. The structures blackened by the platinum method are beyond question these acidophile particles. The absolute distinction between the nucleolus and these bodies, insisted upon by Levi, receives full confirmation from these preparations, for the former, even when the blackening process is pushed so far as to darken all the other contents of the nucleus, can often still be distinguished as a clear spot in the centre.

While there can be little room for doubt as to the essential nature of these three tissue-elements blackened by this method, it is very different with regard to the next and last structure that I have to describe. In preparations from the brain of a healthy dog I have found throughout the cortex and in the white matter, numerous small branching cells of very characteristic aspect. Many of them are uniformly black (fig. 9), but in those in which the black reaction is less marked there can be recognised a rounded nucleus, the diameter of which is about twice that of a red blood corpuscle (fig. 10). Not infrequently there are two nuclei (fig. 11). The protoplasm is generally small in amount and has a very granular aspect. Extending from the protoplasm there are generally from three to six delicate processes which begin to branch at a short distance from the cell, often in a distinctly dichotomous fashion. These processes diminish gradually in thickness the further they extend from the cell. They frequently exhibit little varicose swellings. They are never very long, seldom extending from the cell-body further than to a distance equal to about ten times its diameter. They are not attached to the vessels, and indeed appear to have no special relation either to them or to any other tissue-element. I have also found a small number of these branching cells in the brain of another dog, and in the only human brain that I have as yet been able to examine by this method.

Regarding the nature of these cell-elements, I hesitate in the meantime to come to a definite conclusion. But certain

Fig 8

Fig 9.

Fig 10

Fig. 11

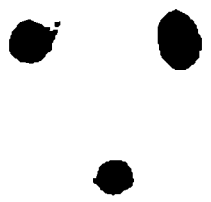

Fig 12.

Fig 13.

Fig 14.

PLATE II.—TO ILLUSTRATE DR FORD ROBERTSON'S PAPER.

For description of figures, see page 29.

facts bearing on the question, and deductions from them, require some reference. In the first place, it seems clear that these elements are not nerve cells, notwithstanding that they very closely resemble the small cells of the molecular layer of the cerebellum. Unlike these cells they are devoid of an axis-cylinder process. Further, they occur in the white matter of the brain and in the first layer of the cortex, as well as throughout the cortex. Are they neuroglia cells? Against this view there is the important fact that in some parts of the same preparations the cells and fibres of the neuroglia can be clearly distinguished, and their appearance is entirely different from that of these branching cells. I have sought for these elements in preparations by Cox's method from the brain of the dog in which they occurred in such large numbers, and have been able to recognise them, though they are not very clearly brought out. The processes are seldom blackened to their extremities, and the characteristic contour is much obscured by excess of the deposit. A suggestive fact that I have been able to establish is, that in practically every brain that I have examined by the platinum method, there are cell-elements which are identical with these branching cells in every respect, except that their protoplasm is not extended into processes. In the human brain referred to, many transition stages between the profusely branched and unbranched cell may be observed (figs. 13 and 14). Similar but less distinct transitional forms may be seen in the brain of both dogs (fig. 12). These facts incline me to the view that it is very probable that in these peculiar branched and unbranched cells we have a special tissue-element belonging to the nervous system which has not hitherto been distinguished as such.

Regarding the reaction of non-nervous tissues to this process, there are merely one or two points to which I wish to refer. Fat cells and fatty granules in cells are distinctly darkened. In no instance have I as yet been able to observe fibres in the walls of the vessels resembling those that are to be seen in the brain. Nerve fibres and nerve end organs are not stained. White fibrous tissue is generally more or less darkened.

I think it is probable that this method will be found of service not only for the demonstration of certain facts of normal histology, but also as a means of revealing the existence of a

number of pathological changes, such as hyaline degeneration of the cerebral vessels, lesions of the primitive fibrils of the protoplasm of the nerve cells, certain alterations of the nuclei of nerve cells, and the occurrence of fatty degeneration in glandular organs.

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7. Bethe. Ueber die Primitiv fibrillen in den Ganglienzellen vom Menschen, etc. *Morphol. Arbeiten herausgegeben von G. Schwalbe*, 1898, Bd. viii., s. 95. (See *Neurolog. Centralb.*, 1898, p. 944.)
8. Giuseppe Levi. *Rivista di Patologia nervosa e mentale*, 1896, f. 4; *Do.*, 1897, f. 5 and 6; *Do.*, 1898, f. 7. (See *Journ. Ment. Science*, January 1899—"Italian Retrospect.")

Description of the Illustrations.

All the drawings were made from platinum preparations. Microscope, Leitz, $\frac{1}{12}$ oil immersion, Ocular No. 3.

Fig. 1.—Arterioles of cerebral cortex of sheep, showing fibres in their walls.

Fig. 2.—Arteriole of white substance of human brain, showing plexus of fine fibres.

Fig. 3.—Capillaries of cerebral cortex of dog, showing fibres in their walls.

Fig. 4.—Two capillaries of human cerebral cortex, showing a fibre passing from one to the other.

Fig. 5.—Two vessels in human cerebral cortex connected by a fibre.

Fig. 6.—Two capillaries of cortex of dog, with very delicate fibre extending from one to the other.

Fig. 7.—Large pyramidal nerve cell of cerebral cortex of sheep, showing primitive fibrils of protoplasm.

Fig. 8.—Nuclei of pyramidal nerve cells of cerebral cortex of sheep, showing acidophile granules.

Fig. 9.—Three branching cells in cerebral cortex of dog.

Fig. 10.—Branching cell from cortex of dog, showing nucleus.

Fig. 11.— Do. do., showing two nuclei.

Fig. 12.—Cells in deepest layer of cortex of dog evidently of a similar nature to the preceding, but only slightly branched or entirely devoid of branches.

Fig. 13.—Branching cell in human cerebral cortex.

Fig. 14.—Cells from the same brain as fig. 13, which exhibit a similar reaction, but which are either devoid of branches, or only slightly branched.

NOTE ON THE TENDENCY IN SOME SYPHILITIC FAMILIES FOR CERTAIN ORGANS AND TISSUES TO BE SPECIALLY AFFECTED

By JOHN THOMSON, M.D., F.R.C.P.Ed.,
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DURING the last ten years I have had under observation various members of a syphilitic family in whom lesions, presumably syphilitic, have been found in the fundus oculi in no fewer than four instances, while such tissues as the teeth and corneæ have not been typically affected. During the same period I have attended four infants of another family, three of whom have had multiple epiphysitis of obviously syphilitic origin.

The continued observation of two such series could not but suggest the question whether there was not a tendency for congenital syphilis, when occurring in several members of a family, to affect the same tissues. The field for the investigation of such a question is necessarily an *exceedingly* limited one, because it is rare in any family for as many as three or four children who have had syphilitic manifestations in infancy to attain even to early childhood, and, fortunately, those who do survive the period of snuffles and rash often show no further indication of the disease during life. It is not very uncommon to find a history of repeated miscarriages or of a succession of still-born infants; but, in the great majority of cases, after one or two syphilitic children have been born, the rest of the family show no trace of morbid inheritance. It seems as if the congenital syphilitic taint has such a strong tendency to lessen with each successive child that, when one member of a family succeeds in surviving its effects in infancy and attaining a fair measure of strength, there is a reasonable probability that the next one may be free from the disease altogether.

A search through the literature of the subject has not supplied any facts bearing on the question; and an inquiry into the family histories of ninety-three congenital syphilitic cases recorded in my own note-books has not revealed much more. The subject, however, seems of sufficient interest to justify the few facts observed being placed on record for what they are worth. They are briefly as follows:—

Family T.

The parents are strong and apparently healthy, they both came of a specially vigorous and long-lived stock. There is no family history of eye disease. There have been seven children and no miscarriages. The children are as follows :—

1. Jane, born May 1879, is a pale slight young woman, with no signs of syphilis, except a few deep radiating scars at the angles of the mouth. No history of any specific manifestation can be obtained.

2. Isabella, born June 1881, died last year from general paralysis which had lasted six and a half years. When nine years old, she was found to have extensive choroidal atrophy in both eyes. When sixteen, she had a subacute attack of periostitis of her right tibia, which rapidly recovered under iodide of potash.

3. Margaret, born September 1882, had severe nasal obstruction in infancy. When one year old she began to take fits, which have continued ever since, and about the same time was noticed to be quite blind as well as defective in intellect. Now she is much undergrown and quite idiotic, and has a distinct syphilitic physiognomy—prominent frontal bones, depressed bridge of nose, and fissures round the lips. Her incisors are all decayed and broken off, she has cataract in the left eye and optic atrophy with extensive choroidal patches in the right.

4. Robert, born December 1886, died from bronchitis at the age of nine weeks.

5. Georgina, born October 1888, had no illness in infancy, so far as her mother can remember. When five and a half years old, she developed extensive choroiditis with considerable impairment of vision in the right eye, and within a year the left eye was similarly affected. Dr George Mackay, who examined the eyes, regarded their condition as probably syphilitic. While under observation she has shown no other specific symptom, and her face is in no way characteristic.

6. David, born August 1890, attended the Sick Children's Hospital as an infant, with marked snuffles and rash. When six and a half years old, his eyes were examined by Dr E. E. Maddox, who reported, in both eyes "slight but distinct evidence of a choroido-retinal inflammatory disturbance in

earlier life, altogether confined to the posterior region of the eye, and not sufficiently extensive to affect vision. No peripheral choroiditis disseminata."

7. James, born January 1898, has shown no symptoms of congenital syphilis.

Unfortunately the mother's memory as to the presence or absence of early symptoms of syphilis in her older children is quite unreliable. She has now no recollection of her sixth child having had snuffles or rash, although he attended the Hospital with these symptoms for several weeks.

Family A.

The parents are strong young people. There are four children.

1. Thomas, born April 1890, had snuffles, first noticed a fortnight after birth, a rash at three weeks, and, between the fourth and fifth week; pseudo-paralysis, with swelling and tenderness of the ends of several of the long bones (epiphysitis) in both the upper and lower limbs. When three and a half months old, he had irido-cyclitis in one eye.

2. Robert, born August 1892, had snuffles when about a month old, a rash at five weeks, and epiphysitis of both upper and lower limbs beginning at six weeks old.

3. John, born October 1894, snuffled at a fortnight, had a rash at three weeks, and epiphysitis, which however only affected the upper extremities, at five weeks old.

4. Another child, born about a year ago, has had no specific symptoms.

Family M.

The parents were not seen. Out of twelve children, only two girls survived infancy. When seen, they were thirteen and ten years old, respectively. They had both characteristic syphilitic teeth, and were both deaf.

Family W.

In a family of ten children, the five younger ones showed no sign of congenital syphilis. Of the five older children, three died in infancy, and two grew to boyhood. Both of these suffered severely from periostitic swellings on several bones of the upper and lower extremities, beginning between the ages of ten and twelve years.

AN EXPERIMENT IN THE TREATMENT OF INERADICABLE CANCER OF THE UTERUS[1]

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MUCH experience of the terminal condition of cancer patients, begun in my dispensary practice as a student, extended only too abundantly in private and parochial work since, and intensified by more intimate personal relations, has led me to a firm conviction that it is ever the surgeon's duty, putting the risks fairly before the patient, to extend more and more the limits and indications of the operations for cancer. In this paper I wish to record the history of an attempt at palliative treatment in a case where fixation of the organs had made complete eradication impossible.

The patient, a spare but not emaciated or anæmic woman of forty-two, referred to me by Dr Halley, had been for six months suffering from pain in the back and low down on the right side of the belly, and had begun to take laudanum for its relief. She had had two pregnancies twenty and seventeen years ago, which ended at term, and her husband had been fourteen years in the asylum. Her periods, regular till two years before, had become scanty and seldom, and some ill-smelling discharge had come in the intervals. About an inch from the orifice, the vagina was contracted by firm masses in the anterior and posterior walls on the right side and passing the middle line, but the finger could reach the somewhat friable cervix. The uterus admitted of antero-posterior movement, but on the right side was almost completely fixed. The rectal mucosa was not adherent, and no enlarged separate glands were palpable.

The patient was anxious to have something done, and, having placed the issues fairly before her, I proposed to attempt to starve the growth by ligaturing its arterial supply, and at the same time, partly on the theoretical ground that the ovaries influence the involution of the genital organs, to remove these in the hope of securing an adjuvant effect.

With Dr Halley's aid, I on 28th November 1897 opened the abdomen in the middle line and, adopting Altuchoff's

[1] Read before the Forfarshire Medical Association.

method, pulled the round ligament near its pelvic wall attachment forward with a hook, thereby producing some separation between the ureter and the uterine artery. Close behind the round ligament an incision was then made into the broad ligament and working down about an inch the artery was found and ligatured with stout catgut close to its origin, thereby controlling also the vaginal branch. This was done on both sides and the ovaries were then tied off with Staffordshire knots of catgut and removed. The convalescence would have been uneventful but the stitches having been removed on the tenth day the upper part of the wound was next day found to have given way for about an inch, and the omentum protruded. The wound was restitched and the progress being otherwise undisturbed the stitches were finally removed on the twenty-second day after the operation. The patient's friends had, we found, been supplying her with laudanum, and on removal to the Convalescent Home she complained that the pain was not relieved. In January she was complaining as much of the pain, and there was a little ill-smelling discharge for which she was given a douche. The bowels were constipated and she was ordered enemata. The vagina was distinctly more patent. On one occasion the douche had brought on some bleeding, but in March, there having been no discharge for a month, it had been stopped. In April the use of laudanum had increased till she took three drachms a day. The vagina was less patent, and there was a sensation of tearing and some bleeding when the finger passed in on the right side. The masses projected more towards the rectum and the patient was becoming thinner and paler. There were some scybala in the abdomen. There had been practically no discharge. In June hæmorrhage began and was at times very free, and the complaints of pain also increasing, morphia was freely used till the patient died on 9th October.

The parts having been removed for dissection, it was found that the ulceration had destroyed the posterior wall of the bladder and had also established a communication with the rectum. The right ureter, dilated above, opened directly in the ulcerous area, while the left ended in its papilla. The left uterine artery was very small, the right could not be traced through the cancer mass. The arteries on the right side were all enormously thickened and beset with hard glands. The

mesenteric glands were infiltrated, and there was a nodule in the left lobe of the liver. The uterus was small and its lumen in part obliterated; the cavity of the cervix seemed free from the new growth. The right leg and thigh were much swollen.

In this case, so far as one can interpret the history, the operation diminished for a time the size and probably the growth of the tumour, and it is possible that it had some influence in delaying the onset of hæmorrhage. It did not avoid the ordinary issue of the disease, nor did it seem to relieve the pain. Hartmann and Fredet have since published notes of three cases of uterine cancer, which they treated by ligature of the arteries with the result of checking the bleeding, and in 1893 Kelly, in the course of extirpating an advanced cancer, ligatured the internal iliac arteries to control oozing, and he notes that the patient lived two years and that recurrence took place more slowly than usual. It is possible that had I tied these arteries more of the anastomotic blood supply of the tumour would have been brought under control. It is, however, to be remembered that in these cases pain is sometimes less when the bleeding is free, and in several cases where it was necessary to control severe bleeding temporarily, I have got good results from the administration of calcium chloride. One cannot of course draw general conclusions from a particular case, but the result in this instance will not induce me to narrow the limits of radical operation in favour of the easier and less immediately dangerous ligature of the arteries.

A CASE OF PRIMARY EPITHELIOMA OF THE UVULA

By WALKER DOWNIE, M.B., F.F.P. & S.G.

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PRIMARY epithelioma of the uvula is sufficiently rare to warrant the publication of the details of a case which came under my observation. By the spread of cancerous disease from the tongue, the fauces and palate, the uvula is frequently implicated, but epithelioma beginning in the uvula, judged by

one's own experience and by reported cases, is seldom seen, and to find the disease entirely limited to that appendage is still more rare.

History.—The patient, who was a blacksmith, fifty-six years of age, was first seen by me on the 15th July 1897, when he complained of having had a soreness of the throat during the previous two months. He informed me on inquiry that he suffered pain at the back of the throat only while swallowing, and thinking "that the pap of the husk had come down" (*i.e.* elongation of the uvula), he had gargled with a solution of alum. Pain and discomfort, however, continued to increase, and latterly it had seriously interfered with deglutition. While awake there was no interference with his respiration, but while asleep he snored loudly, and he occasionally woke up with a sense of suffocation. His voice was unaffected.

Examination.—On inspection it was seen that, while the palate and fauces appeared normal, the uvula was greatly enlarged, as is shown in the drawing (fig. 1), which is life-size. The greater part of the surface of the uvula, anteriorly and laterally, was ulcerated, and the free end or tip, which rested on the dorsum of the tongue, was also raw. The only part on which the mucous membrane was intact was in the middle line, and towards the left near the base of the uvula, and the edges of this area were elevated and irregular. This bulky, ulcerated mass was found to be hard and firm on palpation, and slight manipulation caused the surface to bleed.

No implication of the neighbouring lymphatics, nor enlargement of the cervical glands could be detected. Epithelioma of the uvula was the diagnosis, and the whole appendage was there and then excised. The soft palate and faucial pillars were anæsthetised with cocaine, and the uvula removed by means of scissors, the incisions being made into the soft palate at a considerable distance from the margins of the tumour. In a few days the surfaces were practically healed, and now, at the end of seventeen months from the date of the operation, the patient appears in perfect health, has absolutely no local discomfort, and there is no sign of recurrence. The parts appear now as in fig. 2. Sections of the new growth were prepared by Dr A. R. Ferguson, Pathological Department of the Western Infirmary, and these confirmed the diagnosis of epithelioma.

This being the first and only case of epithelioma originating in the uvula which had come under my notice during a lengthened experience of special work in hospital and private, I was curious to learn if any similar cases had been put on record.

In the various text-books on general surgery and on diseases of the throat which I consulted, either no mention is made of the occurrence of such cases, or if the subject is mentioned, it is spoken of as a possibility only. Mr Lennox Browne, for instance, says in the third edition of his work on "The Throat and Nose and their Diseases," "I have never seen malignant disease of the uvula arising primarily in that situation, but twice I have noticed it as an extension from epithelioma of the tonsil." Amongst the many more or less well-known compilations and indices to current medical literature to which I referred were "Neale's Digest"; "Index Medicus" (from 1879 till date); "The Index Catalogue of the Library of the Surgeon-General's Office, U.S. Army"; and "Schmidt's Jahrbucher," in none of which did I find mention of any similar lesion. But in "Virchow's Jahresbericht," 1896, vol. ii. p. 334, the following case is recorded. Zurakowski W. Ein Fall von primaren Krebs der Uvula Kronika lattarska, No. 2: "The patient was a man 73 years old, in whom the left side of the uvula was the seat of a primary cancerous growth; the removal of the uvula was followed by a favorable result."

Other cases may have been observed and recorded or not, but the above is the only one which I have been able to lay hands on after an extensive search. This fact emphasises the rarity of the lesion.

My patient, along with the growth and microscopic sections of portions of it, were shown at a meeting of the Glasgow Pathological and Clinical Society, and the accompanying drawings illustrate the appearance of the parts (fig. 1) at the patient's first visit, and (fig. 2) fourteen months after operation.

FIG. 1.—BEFORE OPERATION.

FIG. 2.—FOURTEEN MONTHS AFTER OPERATION.

PLATE III.—TO ILLUSTRATE DR WALKER DOWNIE'S PAPER.

Digest

THE PATHOGENESIS OF RHEUMATISM AND THE THEORIES AS TO THE PRODUCTION OF HYPERPYREXIA IN RHEUMATISM

By H. G. LANGWILL, M.D., F.R.C.P.Ed.,
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BEFORE passing on to consider the theories as to the production of hyperpyrexia, it will be advisable first to enquire into the views which are entertained as to

The Pathogenesis of Rheumatism,

in order that we may see whether any light is thrown on the nature of the hyperpyrexial process by a consideration of the pathology of rheumatism.

Prior to the time of Sydenham, rheumatism and gout were not in this country at least recognised as separate diseases; but ever since he differentiated the two maladies, speculations have been numerous as to what the real nature and causation of rheumatism might be. More or less satisfactorily each theory tried to account for the various peculiarities associated with the disease—the apparent influence of heredity, the apparent connection of chills or cold and damp with the onset of the malady, and the tendency to subsequent attacks of the disease in the same patient as well as relapses during its course. To each of the various theories propounded on the subject objections have been urged, so that the problem of the *nature of the morbid process* of rheumatism is by no means so settled as is the *clinical* question of the *method of treatment.* Briefly stated, the chief theories relative to the pathology of rheumatism have been as follows.

The Nervous or Neurotic Theory.

According to this hypothesis, which in this country numbers amongst other supporters Buzzard and Hutchinson, the source of the arthritic troubles (regarded by its advocates as the chief or essential items in rheumatic fever) is believed to lie in a *disturbance of the centres for nutrition of the joints* situated in the central nervous system, probably in the medulla. This disturbance is said to arise from *peripheral irritation* applied to the cutaneous nerves, the *consequence of a chill.* Those who advocate this theory are influenced by the well-known pathological fact of the occurrence of joint troubles arising from lesions of nerves or the central nervous system, *e.g.* Charcot's joint lesions in

Locomotor Ataxy, and point to the condition termed *Rheumatoid Arthritis*, which is now generally assumed to be essentially a *trophic* disturbance of joints. Buzzard further suggests that the *excessive sweating*, so characteristic of rheumatism, may arise from a similar disturbance of the sweat-centres, which are believed to lie in the medulla in close proximity to the supposed centre for nutrition of joints; while the hyperpyrexia which occasionally occurs has similarly been attributed to a corresponding affection of the heat-centres. But, as has been pointed out by Maclagan (20),[1] the *type* of acute inflammation present in rheumatic fever is perfectly different from the form of joint affections which occurs as the result of trophic disturbances in certain diseases; and, moreover, the arthritis is only a part of the rheumatic process; no explanation is given by this theory of the *visceral* lesions so frequently present and so strikingly characteristic.

Latham brought forward a modified form of this "nutrition" theory, the essential of which is that the impaired action of the centres was brought about by irritation from *chemical products* (uric and lactic acid) resulting from an *alteration in the metabolism of muscles* consequent on the hyperoemic condition produced in them by the "chill." This "*Neuro-Chemical*" theory may be considered as partly allied to the following, which was for long the most widely accepted view.

The Lactic Acid Theory.

Though the hyperacid condition of the urine, and the excessive and acid sweats of acute rheumatism had been noticed long before his time, Dr Prout was apparently the first to suggest that the materies morbi might be found in the excess of lactic acid, which was stated to be present in the blood in acute rheumatism. Various modifications of his original suggestion have been put forward: in its most modern form the theory may be thus shortly summarised:—Lactic acid is the product normally of muscle metabolism: it is formed in greater quantity during exercise, but this increased formation is compensated for by its increased elimination (in the form of carbonic acid and water) in the greater activity of the lungs and skin as the result of exercise. Hence the usual balance between production and elimination is maintained. Should, however, the increased eliminative action of the skin be interfered with, *e.g.* as the result of a chill to the surface of the body, then lactic acid accumulates in excessive quantity in the blood and acute rheumatism results.

Around this view a warfare has long waged. Apart from

the statement made by Garrod (15)[1] that "there is no evidence of any excess of lactic acid in the blood of rheumatic patients," it is evident that the theory is faulty in several points, to mention only one—the impossibility of such an excess of lactic acid being produced as the result of even severe exercise as to account for the increased elimination lasting frequently for weeks. It has been urged in its support that (1) inflammatory changes similar to those of acute rheumatism have been produced in dogs by the injection of lactic acid into their system, and (2) that the administration of lactic acid has produced symptoms in man indistinguishable from those of rheumatic fever. Much interest was naturally aroused by these apparently confirmatory proofs of this popular theory of rheumatism; but it is stated by Maclagan (20)[2] that Reyher has shewn the so-called "Endocarditis," which Dr Richardson ascribed to the irritation of the lactic acid injected into dogs, to be a condition which is not pathological at all but is found in dogs irrespective of the cause of death; while the evidence adduced by Foster from the administration of lactic acid to diabetic patients when carefully analysed merely shews (20)[3] that the results of such administration are increased action of the skin, and "failing this, disturbed nutrition of, with consequent pain in, the muscles and the fibrous textures of the joints." Thus while the presence of lactic acid may and probably does account for some of the *symptoms* of acute rheumatism, it cannot be finally accepted as the *cause* of the condition; in reality it is one of the phenomena of the disease and its presence throughout its course has itself to be accounted for.

It was only to be expected that rheumatism, as in the case of so many other diseases, should be ascribed to the entrance from without of some organismal poison. The various manifestations of the disease might thus be explained as the results of the toxines produced in its course. There is practically no evidence that it is distinctly infectious or contagious in nature, but its resemblance in many points to pyœmia could hardly fail to suggest an *infective* process as its cause, but as yet bacteriological research has failed to demonstrate any micro-organism as the specific cause of acute rheumatism. Many investigators have been for long cultivating this field of study, but in support of the view that this disease has many affinities with other infective processes, the researches of Dr Newsholme of Brighton especially call for at least a passing notice. In the Milroy Lectures for 1895 (22),[4] as the result of a most painstaking examination of a vast amount of material, not only on the subject of the periodical occurrence of special outbreaks of rheumatism at certain times (the proof of which he largely draws from the returns of notified cases of acute rheumatism in Norway, Sweden,

[1] p. 22. [2] p. 209. [3] p. 216. [4] p. 589 *sqq.*

Denmark and other neighbouring countries in which this disease has been compulsorily notifiable for periods varying from fifteen to thirty years), but also from enquiries instituted especially into the connection that appears to exist between the occurrence of cases of rheumatism and the *state of moisture* of both the *atmosphere* and the *soil*, he arrives at conclusions which may be thus briefly formulated:—

(*a*) Rheumatic fever is the result of the multiplication in the system of a *pathogenic micro-organism*;

(*b*) That this organism is probably *saprophytic* with a tendency to *parasitism*; and

(*c*) That in *dry* years, associated with *low ground water* and *a high soil temperature*, the growth of this organism is so favoured as to give rise to outbreaks of acute rheumatism which are practically *epidemic*.

There is no need to do more than merely mention the suggestion of Friedlander who, combining the idea of an "infective" process with the former "nutritive" theory, put forward the somewhat original proposition that acute rheumatism is but one of a group of various diseases (*e.g.* exophthalmic goitre, diabetes, &c.) which he calls *central rheumatism*, the cause of which is to be found in a central medullary lesion, which is in turn produced by a specific micro-organism.

Nor need we be detained by considering the theory of *Hueter*, who, regarding endocarditis as the first link in the chain of events, suggested that this was produced by the entry of an organism from without, and that the joint lesions were the result of endocardial embolisms, though the micro-organism itself might also take some part in their production. Since endocarditis, however, has been amply proved by autopsies to be frequently absent, the theory built on this foundation falls to the ground.

The view which has found most acceptance under the category of "infective," and which has in its support to a large extent the conclusions arrived at by Newsholme after his researches, is that which, founding on the similarity of rheumatism in many respects to ague and malarial diseases, is called the

The Miasmatic Theory.

There is no need to enter here upon an examination of the many points brought forward in support of this view by its most prominent advocate, Dr Maclagan. It will suffice to give merely a brief summary of his theory, which is essentially this, viz., that for the production of rheumatism there are *two factors* necessary—(1) a *poison* (which he regards as in some respects analogous to that of ague) which enters the system from without and finds in certain people the (2) *nidus* essential for its vivifica-

tion and reproduction. This nidus he regards as occurring in the fibrous and serous tissues of the motor apparatus. In his own words (20) :[1] "The poison of rheumatic fever is a miasmatic organism which is propagated in the system and finds the nidus requisite for this propagation in those fibrous and serous tissues of the motor apparatus whose inflammation constitutes the special lesion of the disease." In the light of this theory he has discussed at great length the many and varied phenomena of the disease, maintaining that (1) the hereditary tendency to the affection consists really in the *inherited peculiarity of tissues* containing the requisite nidus ; (2) that the excessive perspirations are the result of the greater formation of lactic acid from the *increased muscle metabolism*—muscle being one of the chief seats of the nidus ; (3) that the intracardial lesions, in their particular anatomical sites on the left side of the heart, are really at the outset essentially lesions of the *fibrous tissue* and not primarily of the endocardium proper ; while (4) the success of the treatment which he introduced, to this country at least, is ascribed to the direct *antagonistic and destructive action of the salicyl compounds* upon the first of the two factors in the disease —the poison,—relapses or recrudescences arising through the antidote having been cut off before all the poison in the system has come under its power.

While accepting, then, this miasmatic theory as perhaps the most probable hypothesis yet put forward to account for the phenomena of rheumatism, there is one point I would specially remark on in reference to Maclagan's comprehensive discussion of this subject, namely the view which he seems to take of rheumatism as being essentially a disease which occurs *after* childhood ; as he says (20)[2] : "The age of liability to rheumatic fever is from fifteen to fifty," and again,[3] (It is) "rare before fifteen," ; while in another part of the same work, when speaking of the hereditary predisposition, he uses these words:[4] "This inheritance seldom declares itself before fifteen." Scarcely sufficient attention is paid in his writings, it seems to me, to the amount of evidence which has been brought forward in recent years by Barlow, Cheadle and others of the undoubted fact that acute rheumatism is far from an uncommon disease in children, though no doubt its manifestations in childhood do not usually present quite the same type as in persons over fifteen. I draw attention to this point, not because it at all weakens, so far as I can judge, his arguments, but because the application of Maclagan's miasmatic theory to the explanation of the *rheumatism of children* may possibly help to throw a little further light on the question we have next to consider, viz., the *production of hyperpyrexia.*

[1] p. 234. [2] p. 232. [3] *Op. cit.*, p. 201. [4] *Op. cit.*, p. 234.

Pathogenesis of Hyperpyrexia.

Before we can take up the subject of the pathogenesis of rheumatic hyperpyrexia and the theories regarding it, a brief résumé is required of the views at present entertained as to the means by which—(*a*) the *normal* body-temperature is maintained, and (*b*) the condition termed *pyrexia* is brought about.

(*a*) Normal Temperature Mechanism.

The thermal apparatus of the human body is believed to consist in the following:—(1) *heat-producing* structures; (2) *heat-eliminating* structures; and (3) a *controlling nervous centre* in communication with both of the preceding. Heat is universally admitted to be produced by tissue metabolism in all parts of the body, the chief seats of this being the skeletal muscles and the liver. The heat so produced is got rid of by several channels—the lungs, kidneys, &c., but for practical purposes chiefly through *the skin*, both by radiation and the evaporation of sweat. Thus Vierordt's experiments show (24)[1] that 87·5 % of heat loss is effected through this channel alone. To ensure a proper balance being maintained between production and elimination, it is essential that there be some controlling mechanism, and Macalister in his Goulstonian Lectures for 1887—as quoted by Hale White (16)[2]—suggested that it consisted of the following:—(1) "A *thermolytic* mechanism, acting chiefly through the skin by the cutaneous vessels and the sweat glands, having its nervous centre in the *medulla*; (2) a *thermogenetic*, consisting of—(*a*) the muscles, or (*b*) that part of the cerebral nervous system—probably the corpus striatum—which controls this function of muscles, and (*c*) nervous paths connecting these two; (3) a higher controlling or *thermotaxic* mechanism whose office is to adjust the balance between the other two." When, therefore, *e.g.*, during severe exercise the increased tissue metabolism of the muscles necessarily results in a large augmentation in the heat of the body, the temperature is kept from rising by a counter-balancing increase in the heat loss, which accompanies and follows the exercise, manifested by the glowing and perspiring skin of the athlete. The precise localisation of the seat of this thermotaxic nervous mechanism is unknown, though Hale White in the same article (16)[3] suggests that "probably we should look for it in the cortex." Ott, who has shown that[4] "when putrid blood is injected into the veins, it is impossible to produce fever (in animals) if the corpora striata have been removed," also states further (23),[5] on more or less satisfactory data, that "in the lower animals *six*

[1] p. 850. [2] p. 467. [3] p. 468. [4] *Op. cit.*, p. 473. [5] p. 434.

centres have been localised, injury of which causes increased temperature, viz.—(1) the cruciate at the rolandic fissure; (2) part of the sylvian; (3) candate nucleus; (4) tissues about the corpus striatum; (5) anterior and inner end of the optic thalamus; and (6) a point between this latter and the corpus striatum." It is only right to mention that in the most recent work on physiology (published since the foregoing was written) Pembrey (24)[1] evidently regards the proof as to even the existence of heat centres as insufficient, his summary being stated thus —"an impartial examination of the above evidence leads to the verdict that the existence of the so-called heat centres in the brain has not been proved." But in any case the correctness of Ott's anatomical localisations does not materially concern us here. The brief sketch given above of the three mechanisms may suffice for our present purpose, and enable us to pass on to consider

(*b*) The Pyrexial Process.

If the mechanism for heat regulation be such as above described, pyrexia or elevation of the body temperature above normal might *theoretically* be produced in either of two ways—(1) from an increased heat production, or (2) diminished heat loss. The exact nature of the process has been the subject of much investigation, but briefly it may be stated that (largely as the result of Dr Hale White's elaborate experiments and observations) it is now generally admitted that in all probability the febrile process (whereby pyrexia results) is *not the same* in all cases. *Each* of the two *theoretical* types of pyrexia probably occurs. Thus Dr Hale White, after giving the results of an interesting series of investigations in various diseases, mentions (17)[2] that in some conditions (of which he gives enteric fever as an example) "the pyrexia in part at least is due to *diminished heat loss*," while in "others this is of but slight importance, and then the *production of heat is very great*," pneumonia being the ailment he takes as illustrating this variety of pyrexia.

Such being the most probable view of the process in *pyrexia*, the question naturally follows—is *hyperpyrexia* produced in the same way, or, in other words, is the *hyper*pyrexial process *literally* an "*exaggerated pyrexial*" process? This leads us to enquire whether all cases of hyperpyrexia appear to own the same cause, or whether the method of production varies in different diseases?

Now hyperpyrexia (or perhaps, in this connection, better "excessive temperature") is a condition exhibited in a great variety of diseases, and while no doubt in one sense all cases of *hyperpyrexia* are characterised by the same phenomenon, still is

[1] p. 865. [2] p. 1725 *sqq.*

there not something to be said in favour of regarding them—*clinically* at least—as showing more than one type?

1. In some cases the excessive temperature might almost be regarded as *merely an exaggeration* of the characteristic pyrexia of the particular disease. Thus in the case of a patient who has had for some days a severe attack of pneumonia with a high level of temperature probably reaching 105°, does not the rise of the temperature to such a point as 105·8° (*i.e.* beyond our so-called hyperpyretic limit) suggest a mere exaggeration of the pyrexial process in this special case? The fact (as above mentioned) of the pneumonic pyrexial process being essentially characterised by *excessive heat-formation*, is of itself somewhat significant in this connection.

2. In another group of cases the "excessive temperature" might be explained as being merely a *pre-mortem phenomenon*; by which I mean, that in the cessation of the vital processes this mechanism for temperature regulation is very markedly affected, if indeed it has not altogether ceased to act before the cardiac or respiratory mechanism has actually failed. In such cases death is, as it were, laying his hand early on this part of the organisation, just as it has recently been shown (11)[1] that in other instances respiration fails and ceases while the heart still goes on acting. May not the hyperpyrexia occasionally met with in *e.g.* tubercular meningitis be an instance of this pro-agonistic type, as it has been termed? That this variety at any rate is *universally fatal*, in contra-distinction very markedly to the previous type, will, I think, be admitted by all.

3. Another group of cases is formed by those in which the hyperpyrexia is produced by *an injury* to the cerebro-spinal nervous system. Surely *clinically*, as well as *anatomically*, there is a vast difference between the "excessive temperature" in the case of a man with cervical spinal injury or hæmorrhage into the corpus striatum, and the sudden temporary hyperpyrexia of an acute pneumonic fever or the pre-mortem rise of temperature in a meningitis.

That hyperpyrexia has not always the same grave significance and is probably not always produced in the same way is, I think, evident from the numerous well-authenticated cases of "paradoxical" or "hysterical" hyperpyrexia, none of which prove fatal, although the temperature rises far above limits which are fatal in other types.

Without pursuing this subject further, then, let us see if there be any variety of hyperpyrexia to which the form that occurs in rheumatism corresponds. There will be a general consensus of opinion that its analogue (and a very close one) is to be found in the condition described as *heat-apoplexy*, an affection in which

[1] p. 145.

the patient (who has usually been previously in his ordinary state of health) is suddenly seized with headache, muscular pains, and a feeling of prostration followed by coma, with excessive temperature, which, unless treated, soon terminates in death. The resemblance between the symptoms of this condition and that present in rheumatic hyperpyrexia has been frequently commented upon; and (as Maclagan has shown) a consideration of the mechanism by which the excessive temperature is produced in *this* affection throws considerable light on the probable pathogenesis of rheumatic hyperpyrexia.

We have seen that in this latter affection there are other and frequently more prominent phenomena than the mere temperature elevation; the symptoms of nervous disturbance with a tendency to fatal coma are as essential parts of the process as the mere excessive temperature. Formerly it was supposed that these nervous symptoms were the *result* of the excessive temperature; but, apart from the fact that this in no way explained how the temperature alteration was produced, it is now quite well recognised that a patient may exhibit, even for some considerable time, a temperature of equally excessive limit and yet show no such "nervous" manifestations or tendency to coma and death, as *e.g.* in so-called cases of "hysterical" hyperpyrexia, or even relapsing fever (Maclagan). There is considerable reason for believing that the excessive temperature is the *result* rather than the *cause* of the nervous disturbance, and a study of the causation of the phenomena of heat apoplexy will probably best bring this out.

Heat-Apoplexy: its probable explanation.

If the normal *elimination* of heat be interfered with while the process of *heat formation* goes on uninterruptedly, it is evident that the temperature of the body must inevitably rise, and continuously so while life lasts, unless heat elimination is restored, or the heat production inhibited. Whether there exist separate centres—a "heat-inhibiting" and a "heat-producing" centre, with a still higher "heat-controlling" centre—or whether there be only one heat-controlling centre, with stimulating and inhibitory functions, has not been definitely proved. For practical purposes, what we have to deal with is the fact that the body-temperature may rise from two distinct causes—(*a*) stimulation of the heat-producing mechanism, or (*b*) inhibition of the heat-eliminating mechanism, while the temperature will similarly be reduced by reversing these processes. That this inhibitory function is an active and not merely a passive one is practically certain from the well-known fact that a "destroying" or non-inflammatory lesion of certain parts of the central nervous

system (*e.g.*, injury to the spinal cord in the cervical region, or hæmorrhage into the corpus striatum) is usually attended by a considerable rise of temperature, often to extreme limits. Now rise of temperature, as Maclagan points out, resulting from a destruction or a paralytic condition of part of the nervous system, can only mean that the normal function of that part was one of *active* inhibition. The analogous mechanism existing in the case of the heart is quoted by the same writer, where the vagus is constantly actively resisting the excito-motor mechanism, and so maintaining the pulse at its normal rate. But since heat (as we have seen) is the product of tissue-metabolism, *this* will be the process which requires to be kept within its proper limits by the inhibitory mechanism. Should this mechanism fail to act (through inhibition being paralysed), then the uncontrolled tissue-metabolism must inevitably produce hyperpyrexia. Such, then, is the explanation of the phenomenon of heat-stroke, which is brought about as follows:—The normal heat elimination of the body being interfered with owing to the high atmospheric temperature, the onus of preventing too much heat production is thrown upon the heat- (or metabolism) inhibiting mechanism, which, consequently, is kept acting at high pressure. Under ordinary conditions the mechanism is fit to cope with the difficulty, and nothing more serious than a sense of prostration and exhaustion results. But under certain circumstances the long-continued and excessive action of the heat-inhibiting mechanism results in its paralysis from over stimulation. *Heat-stroke* is thus held by Maclagan to be essentially a *fatigue paralysis of heat inhibition*, or, in a wider sense, a *paralysis of the inhibition of tissue metabolism*.

[Since the foregoing description of the present view of the pathogenesis of heat-stroke was written, an article on this subject has been published (27)[1] by Dr W. Sambon, in which he maintains the theory that the condition is due to a micro-organism, and that it is in short a "specific infectious disease." Consideration of his theory, and the arguments adduced in its support, would be quite out of place here; but I think it only right that the existence of another and contrary hypothesis should be noticed.]

Maclagan's Theory of Hyperpyrexia in Rheumatism.

Now the bearing of all this examination of the phenomenon of heat-stroke upon the pathogenesis of rheumatic hyperpyrexia is brought out by Maclagan in this way. The similarity between this condition and heat-apoplexy exists not merely in their symptoms and clinical features, as also the *post-mortem* appearances in fatal cases, but is emphasised by the fact that the same

[1] *The Etiology of Sunstroke*, Sambon. *Brit. Med. Journ.*, i., 1898, p. 744.

method of treatment succeeds in both conditions. Such a resemblance throughout naturally suggests that the phenomena are similarly produced in the two cases. The train of reasoning he pursues is as follows:—

1. *Tissue metabolism (of muscle) occurs to a greater extent in rheumatism than in any other febrile process.*—The *proof* of this he finds in the excessive quantity of lactic acid (the product of muscle metabolism) present in rheumatism, and which he states to be present in no other fever. The *explanation* of this abnormally excessive metabolism lies in the fact that the propagation of the rheumatic poison occurs chiefly in muscle which contains its nidus.

2. Granted, then, that muscle metabolism is excessive *in rheumatism*, it follows that *heat-production is also excessive*; in proof of which contention he again points to the extremely active condition of the skin (showing the compensating heat eliminating functions to be exceedingly active). If these balance each other, no undue pyrexia will result.

3. But while heat elimination is thus active, *the inhibitory mechanism will be in constant action upon muscle metabolism*, and in view of the excessive quantity of heat liable to be produced, this inhibitory mechanism *will be stimulated to work at high pressure.*

4. If, then, "*either from want of vigour, or from unusual susceptibility of the nerve centres, aided possibly by more or less failure in the heat eliminating action of the skin, heat production was in excess of heat-elimination, heat would accumulate in the system . . . the heat-inhibiting centre would be first stimulated to excessive effort, then fatigued and finally paralysed, and hyperpyrexia would result*" (20).[1]

Practically, then, Maclagan views hyperpyrexia in rheumatism as equivalent to the supervention of the phenomenon of *heat-stroke in rheumatism*, with this difference, that in *idiopathic* heat-stroke the condition arises in dealing with heat which is *normally* produced, while "*rheumatic heat-stroke*" (if the phrase be permitted) is due to a failure of the inhibiting mechanism to control the *excessive heat-production* which is a characteristic feature of rheumatism. He consequently defines rheumatic hyperpyrexia as—"Paralysis of inhibition of metabolism, paralysis of heat-inhibition being only part of the process."

I had hoped that some light might be thrown by Dr Hale White's Lectures (17) previously referred to upon this question of the pyrexial process of rheumatism being characterised by excessive heat-formation, but unfortunately I have been unable to discover any reference to experiments or observations upon rheumatism at all.

[1] p. 321.

Criticism of Maclagan's Theory of Rheumatic Hyperpyrexia.

While no doubt objections might be urged to some of the statements upon which this theory is based, a consideration of the various features that characterise the great majority of cases of hyperpyrexia in rheumatism shows that they are certainly not incompatible with such an explanation, and indeed some of the more obscure phenomena are made clearer. It will probably conduce to greater simplicity if, in the light of Maclagan's theory, we examine in order the various characteristics of rheumatic hyperpyrexia as detailed in a previous part of this digest.[1] Thus—

I. The *occurrence of the complication at certain seasons* (often several cases at short intervals with subsequent periods when no case of rheumatism develops it) may arise from a greater difficulty in eliminating the excessive heat at these times. Similarly its greater *tendency to occur in summer*—at a time when cases of rheumatism are not common—might be thus partly explained. It might be urged, no doubt, that hyperpyrexia should ensue much oftener than it does in cases of rheumatism which occur in hot weather, but the element of the *personal factor* in reference to the stability of the nervous organisation always comes in.

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II. Further, *the comparative rarity* of this complication is obviously due to the fact that more than one factor is requisite, not only the tendency on the part of the patient to instability of the nerve centres, but, in addition, impaired elimination of heat, &c.

III. As regards *the influence of age* upon hyperpyrexia, we saw that the commonest age for its occurrence is also the period of the greatest frequency of rheumatism. I shall specially refer later on to the bearing of this theory upon the absence of this complication from rheumatism in childhood as previously mentioned.

IV. The *greater incidence of this complication amongst males* has been assigned by several to their greater tendency to alcoholism, with consequent impairment of their nervous organisation. Might it not also be partly accounted for by the fact that in them, owing to the conditions of their daily life, tissue metabolism (and consequently heat-production) is not only much more active, but is also liable to be put to excessive strains? Their heat-controlling mechanism is thus called upon for more constant activity than in the case of females, and might thus be more liable to break down.

V. The *greater frequency of the phenomenon in first attacks of*

[1] *Scot. Med. and Surg. Jour.*, iii. p. 523 *sqq.*

rheumatism is obviously due to the presence in the patient of what may be regarded as a *predisposing* cause—the inherent tendency to instability of the heat-regulating apparatus, which is clearly included under Maclagan's phrase "unusual susceptibility of the nerve centres." That such a patient should show a liability to this complication in his *first* attack of rheumatism is only natural, but this subject will be further alluded to when another of its aspects is considered.

VI. *The uselessness of remedies which control the pyrexial* process of rheumatism *for the treatment of hyperpyrexia* in the same disease is also explained. For hyperpyrexia being due, not to the action of the rheumatic poison, but to *paralysis of inhibition of metabolism, anti-rheumatic* remedies are obviously valueless.

VII. The explanation of the *almost universally fatal character of the hyperpyrexia when untreated* (as compared with other instances in which equally high temperatures are recorded) is also self-evident—in the paralysis of one of the most vitally important centres of organization in the body; while

VIII. The very *fact of the success of the proper treatment*, as compared with the results in those cases in which the same mechanism is actually destroyed, such as cases of injury to the cervical spinal cord or the corpus striatum, only emphasises the more that it is a *function* which is abrogated, and not an *organ* which is destroyed.

IX. The *explanation of the efficiency of cold to the surface* of the body *in curing the condition* or *preventing its recurrence* also agrees with the theory propounded; for the action of ice lies in more than a mere abstraction of heat. No doubt this of itself is extremely important; but to admit that this was the *whole* result of its application is, as Maclagan points out, tantamount to regarding the symptoms of the condition as entirely due to the high temperature, which we have just seen is *not* the case. The excessive temperature is merely one of the manifestations of the nervous disturbance, and the chief value of cold applied to the surface lies in its enormously powerful stimulation of inhibition of heat formation. It thus strikes at the fountainhead of the mischief by its action upon the failing nerve centre, while at the same time it facilitates this restoration of the flagging energy by abstracting so much of the excessive heat already formed.

X. The next point is one of the most difficult to explain in the occurrence of hyperpyrexia, viz.—*its tendency to appear in even mild cases of rheumatism.* Were hyperpyrexia the result of an "excessive pyrexial" process, then one would expect it chiefly in *severely pyrexial* cases of rheumatism. This theory, however, regarding, as it does, hyperpyrexia as resulting from essentially

different causes from the ordinary pyrexial process, while it does not altogether explain it, is, at least, not incompatible with such a peculiarity of the complication. No doubt this is not a very strong defence to make of the correctness of Maclagan's hypothesis; but at least this much can be further said in its support, that the difficulty is not surmounted in any better fashion, as we shall see, by the other theories that might be put forward.

XI. Lastly, *as regards the cessation of sweating*, a characteristic which is, however, by no means universally present, two views might be taken. It might be regarded as evidence of the truth of Maclagan's theory, inasmuch as it suggests the presence of one of the factors he mentions, viz.—"more or less failure in the heat-eliminating action of the skin." But, if looked at more carefully, does this not imply that the real primary cause of the hyperpyrexia is a failure of the *eliminative* mechanism? Thus it might be suggested that the first step in the process was really (1) *exhaustion* of the *heat-eliminating mechanism* from over-stimulation; and (2) consequent upon its exhaustion the whole stress of controlling the temperature would fall upon the *heat-inhibiting* centre, which might thus become really *the second link* in the chain of events.

The granting of this other hypothesis does not mean the invalidation of Maclagan's theory; for the essential feature of this (viz., the excessive heat-formation characteristic of rheumatism) implies equally excessive action of the *eliminative* function in its attempt to prevent undue accumulation. If, then, this excessive stimulation of elimination leads to exhaustion and paralysis of the function, the whole strain will be left to be borne by the *heat-inhibiting* mechanism, which may in turn give way, and not until then will hyperpyrexia ensue.

But even *when there is no paresis of the heat-eliminative* mechanism, hyperpyrexia may ensue. This, I think, is distinctly proved by the occurrence of numerous recorded cases, in which, so far from there being cessation of sweating, this function continues *actively to the end.* Thus it is evidently the failure on the part of the *heat-inhibiting* mechanism which is the *important factor* in the production of hyperpyrexia, the thermolytic mechanism, even when still thoroughly active, being unable to cope with the excessive heat-production in rheumatism unless powerfully reinforced by the activity of the heat-inhibiting function.

While, then, our examination of Maclagan's theory of the pathogenesis of hyperpyrexia in rheumatism brings out that it offers an explanation which is at least quite feasible, it will be necessary to glance briefly at other views which have been put forward.

Other Theories of Rheumatic Hyperpyrexia.

1. It has been suggested by some that the hyperpyrexia is the result of a *direct action of the rheumatic poison* upon the *heat-centres in the central nervous system* (9).[1] This idea is closely related to the old view that "cerebral rheumatism" was a metastasis of the rheumatic process from the joints to the brain, in support of which contention the frequent cessation of joint-pains in hyperpyretic cases was quoted. But this latter is not an essential, for the poison might be supposed to act upon the centres in the brain while still continuing to affect the joints. Apart, however, from the *peculiar rarity* of this *direct* action upon the heat-centres of the poison (which is presumably constantly circulating in the patients' blood in *every* case of rheumatism), and for which infrequency no adequate explanation is given, it must be noted that a similar hyperpyrexia occurs in several other cases in which there is not the slightest ground for believing any rheumatic poison is present at all, *e.g.* heat-stroke or hæmorrhage into the corpus striatum. Moreover, how should the application of *cold* to the surface of the body *cure* such a condition which, unless thus treated, is practically always fatal? Against the suggestion which might be offered that it was only in cases of *virulent* poison that this affection of the nerve-centres occurred is the well-known fact of the frequent occurrence of hyperpyrexia in cases of rheumatism with *mild* symptoms, which would not likely be the case were the rheumatic poison of a specially *virulent* type.

2. Perhaps, however, the suggestion might be urged that—still adhering to the view that the hyperpyrexia is the result of some *poison* upon the heat-centres—the materies morbi might be something *distinct from* the rheumatic poison—possibly some (*a*) *other poison* present *along with* that of rheumatism—as in what is called, in surgical pathology, cases of "mixed infection"; or (*b*) a *product of its action*—a toxine, so to speak. (*a*) The fact of the pyrexial process having shown in at least several of the cases little sign of being controlled by the salicyl compounds might, no doubt, be adduced in support of the view that some other fever-producing substance is present on which the specific anti-rheumatic drug has no effect; but on the other hand so many of the cases which develop hyperpyrexia have presented clinical features differing in no respect from ordinary *simple* cases of rheumatism, that the former of these suggestions is very improbable; for one would expect a case of "mixed infection" to show, if not *unusual*, at least *severe* symptoms; while the remark made upon the success of treatment by cold under the previous hypothesis holds equally true in this connection.

[1] p. 266.

(*b*) In favour of the "toxine" theory, perhaps rather more evidence might be adduced. While the phenomenon under consideration is quite different from the nervous (paralytic) disturbances frequently seen in cases of diphtheria (now generally admitted to be the action of toxines), are there not some grounds for regarding rheumatic hyperpyrexia as in some respects allied to that "complex of symptoms" (as it is called) known as *diabetic coma*? No doubt the exact pathology of this latter phenomenon is as yet unknown. The clinical picture, however, in the two cases presents rather a striking resemblance, not merely in the mode of onset, with its prodromal symptoms of cerebral impairment or excitement, with restlessness, insomnia, and (in diabetic coma) markedly altered type of respiration, passing into coma in both instances, but also in the fact of the frequency of the supervention of the complication in cases which have previously shown no symptoms of unusual severity, the one striking contrast being the absence of excessive temperature in a diabetic comatose case as compared with the patient in a state of "rheumatic coma," if I may use the expression. In the *former* the *respiratory* mechanism is the one which appears to be most perturbed by the poison, while in the *latter* the disturbance is chiefly manifested apparently in the *heat-regulating mechanism*. Is it possible that the poison might be some product of perverted tissue-metabolism arising in certain cases, and setting up, by its toxic action upon the central nervous system, the various nervous phenomena, *e.g.* insomnia, delirium, and coma, with occasional convulsions, as well as the disorganisation of the heat-regulating mechanism, the nature and exact localisation of which is not known? Such a theory is, of course, purely speculative, but it might be possible to bring the hypothesis in several respects into accord with the facts known regarding the phenomena presented in rheumatic hyperpyrexia. Thus the comparative *rarity* of the complication might be explained, as being due to the necessity for the coincident occurrence of the two factors which might be requisite for its production—a special variety of rheumatic poison or some peculiarity of the metabolic processes special to the individual; and similarly the *suddenness of its supervention* in apparently typical cases of acute rheumatism is quite on a par with the clinical characteristics of diabetic coma; while the method of treatment successfully adopted in a case of rheumatic hyperpyrexia by H. Barré (2),[1] by the process which he terms "Disintoxication of the Blood" (as alluded to subsequently under the heading of treatment), is curiously suggestive of the treatment advocated for cases of diabetic coma by means of transfusion of saline solution.

Before venturing even to suggest that the explanation of the

[1] p. 230.

phenomena of rheumatic hyperpyrexia might be found in such a theory, a much more elaborate examination and comparison of the features of the two conditions—viz., diabetic coma and rheumatic hyperpyrexia with coma—would be required, but enough has been said to indicate that this line of investigation might throw some light upon the pathogenesis possibly of both conditions.

3. The only other aspect of the pathogenesis of hyperpyrexia in rheumatism which it is necessary to allude to is the view which was formerly held that the occurrence of the condition is due to the *presence of visceral complications*, and especially *pericarditis*. That such complications frequently *are* present is undoubted, and that their supervention upon an ordinary attack of acute rheumatism will often lead to an *exacerbation of the pyrexia* in that attack is equally true, but these facts do not at all account for the marked *nervous* phenomena which are equally characteristic of rheumatic hyperpyrexia, nor yet its practically universally *fatal* character. For pericarditis and such complications occur not infrequently in other diseases, *e.g.*, Bright's disease, *without* any such hyperpyretic manifestations, or accompanying nervous phenomena. Moreover (and this is a point which, though very striking, has not received sufficient notice, so far as I can discover), we shall see that it is *especially* in the rheumatism of *childhood* that the *visceral* manifestations of the rheumatic poison occur most frequently, while it is just *in those very cases* that hyperpyrexia is *not* found. But over and above those various reasons, the undoubted fact of the absence of any such complications, as has been proved now by ample data from necropsies in fatal hyperpyretic cases, definitely settles the question as to the possibility of this being the true explanation.

As a result, then, of our examination of the various theories which have been put forward to account for the clinical phenomena comprised under the term "rheumatic hyperpyrexia," the balance of probability appears to lie with that of Maclagan, which not only affords a feasible explanation of the pathogenesis but is also quite in consonance with the various characteristic features of the condition.

Before leaving this part of our subject there are two other points which appear to me worthy of special notice in reference to this theory of Maclagan's as to rheumatic hyperpyrexia. The first has reference to the

Recurrence of Hyperpyrexia.

Should it not be expected that patients who have once shown this phenomenon in an attack of rheumatism would again be liable to a recurrence of the condition if they have

subsequently another attack of the same disease? I have already intentionally quoted Maclagan's words in reference to what one might term the predisposing cause of the condition, where he speaks (20) [1] of "an unusual susceptibility of the nerve centres" as probably having some part in its production. If then a patient has this tendency to instability of his heat-regulating mechanism one would expect not only the complication to arise in his first attack (this we have seen to be the rule) but also that subsequent attacks of rheumatism should have a tendency to reproduce the same complication and all the more since the previous paresis of the mechanism might be expected to have left it in a weaker condition than formerly. There are probably few diseases in which the tendency to subsequent attacks of the malady is more widely recognised, and the fact of the recurrence of such a complication as hyperpyrexia would surely be noted by those who have published instances of the condition. But, as before mentioned, not a single instance of the reappearance of hyperpyrexia in the same patient during a subsequent attack of rheumatism can be found amongst the *published* cases which I have been able to collect, ninety-four in all, my own solitary case of A. S. being already noticed in a previous digest. It is difficult to explain this absence of any published reports of such a recurrence of rheumatic hyperpyrexia. It is just possible that, with the previous history in view, subsequent attacks of rheumatism in such individuals are so watched that the *prophylactic* treatment of hyperpyrexia comes in to explain the apparent anomaly, but one would have expected that surely a few instances would have occurred and been deemed worthy of recording. While, then, unable to account for this rather strange statistical anomaly I thought it at least worthy of a passing notice.

The other point I wish to draw attention to has reference to

Rheumatism as it occurs in Children

I have already mentioned that Maclagan in his arguments in support of the miasmatic theory regards rheumatism as rare in children and he goes on to show [2] that the possible explanation of this rarity lies in the fact that "the action of the rheumatic poison is almost confined to . . . those parts of the fibrous and serous tissues of the body which enjoy a high degree of functional activity." He then suggests that in childhood the joints and especially the muscles have not reached this period of greatest functional activity and that therefore rheumatism does not occur in childhood. But as before indicated, abundant evidence exists to show that rheumatism does affect children very markedly,

[1] p. 20 [2] p. 23

although the phenomena they exhibit during its course are not modelled on the type of rheumatic fever in adults, in whom the arthritic symptoms and profuse sweatings are usually the most prominent features. In children, on the other hand, as is so frequently pointed out, especially by Cheadle, "arthritis is at its minimum while pericarditis and endocarditis," etc.—other manifestations of the action of the rheumatic poison—"are at their maximum" (4)[1]; and again, "in early life, the fibrous tissues of the subcutaneous fasciæ, tendons, pericardium and endocardium are far more sensitive to the morbid stimulus . . . than the same tissues in later life." [2] It is because of this difference in its clinical features at different ages that Cheadle puts forward the plea for regarding the disease as it occurs in *children* as the true type of acute rheumatism, because in them manifestations of the action of the rheumatic poison are seen which do not present themselves after adolescence.

While then the *occurrence of rheumatism in children* is undoubted—(Fagge mentions (13)[3] that even in a general hospital like Guy's out of 365 cases of "first attacks" of rheumatism no less than 6% occurred in patients between the ages of five and ten), — the *almost entire absence of rheumatic hyperpyrexia* amongst them is just as well proved as we have already noted.

Explanation of the Absence of Rheumatic Hyperpyrexia in Children.

Now, are there any special characteristics in the rheumatic process in childhood, which might serve to give an explanation of this absence of hyperpyrexia? Of all persons, surely in *children*, in whom often the very slightest causes will induce a marked degree of pyrexia, one would expect this feature of "excessive" temperature to present itself. Undoubtedly so, if the hyperpyrexia of rheumatism is really "*excessive*" pyrexia. We have, however, held it as proved in a former portion of this paper that it is *not so* at all, but the result of quite a different process. In the light, then, of Maclagan's suggestion as to the influence of functional activity upon the localisation of the rheumatic process, might one proffer the suggestion that *hyperpyrexia is absent* from *rheumatism in children*, because in *them there is awanting* the *excessive heat-production of rheumatism in adults?* There would seem to be sufficient grounds for such an explanation in view of the following facts:—

1. *Arthritis* is comparatively a *very slight phenomenon* in rheumatism in children. Cheadle says (4)[4]—"The articular affection . . . is usually slight and subordinate, and, indeed, may be

[1] p. 8. [2] *Op. cit.*, p. 107. [3] Vol. ii. p. 694. [4] p. 8.

absent altogether from a seizure undoubtedly rheumatic in its nature."

2. The *same is true of sweating*; practically never is the excessive and acid sweating of the adult type of rheumatism to be met with. The same authority says[1] again—"The profuse sweating, one of the typical symptoms in the acute rheumatism of adults, is rarely seen in children, the rarity being in inverse proportion to age. It only begins to appear with more severe joint affection as age advances."

Now if the rheumatic poison in children affects the fibrous tissue of the peri- and endocardium and the subcutaneous fasciæ rather than the joints and muscles, because in the *former* is situated the nidus requisite for its propagation, then there will be less *sweating*. For, according to Maclagan (20),[2] lactic acid, which acts as such a powerful stimulant to the sweat glands, is not a product of metabolism of white fibrous tissue structures (consisting as they do chiefly of nitrogenous tissue) to anything like the same extent as is the case with muscle (non-nitrogenous). The difference in the *clinical* type of the disease in the two cases is thus explained.

But further, the metabolic process which goes on in the case of these fibrous and serous structures is a much less active one, so far as concerns the production of *heat*, than that of the metabolism of muscles, and much less heat is consequently produced. Thus Cheadle says (4),[3] when speaking of the mild pyrexia of rheumatism in childhood as compared with adults: "it must be chiefly the arthritis which raises the temperature."

Chemically, then, so to speak, the rheumatic process in children is characterised by much *less heat-formation*, and hence there is no call whatever for extra stimulation of the inhibitory function, just as there is nothing to produce fatigue of the eliminating mechanism. Paresis of the thermotaxic mechanism, therefore, from over-stimulation is practically impossible. Briefly stated, then, the suggestion I would offer to account for the absence of hyperpyrexia in the rheumatism of children is this:—Since the rheumatic poison *during childhood* finds its nidus chiefly in the *fibrous tissues*, there is *less heat produced* (the chief seat of heat-formation being muscle); consequently there being no excess of heat-formation, *no strain is put upon* the *heat-regulating mechanism*, and therefore *paresis of this* mechanism *from over-action could not be looked for.*

That the nidus suitable to the rheumatic poison should be situated in different tissues at different ages is quite in consonance, I think, with what we know of other pathological processes. Thus is there not a parallel instance in the recognised incidence of *tubercle* upon the *cerebral meninges* rather than the

[1] *Op. cit.*, p. 32. [2] p. 236. [3] p. 33.

pulmonary tissues in ***children***, as compared with ***adults***, in whom the relative frequency of incidence is just the opposite?

It might be said, however, that a ***mildly pyrexial*** case of rheumatism in an ***adult*** is on a par with the ***type of rheumatism*** in ***childhood*** since the production of heat in such a case is evidently not very extreme, and yet hyperpyrexia frequently occurs, as we know, in mild cases of rheumatism in adults. No doubt this is true, but while the mild case of adult rheumatism ***appears*** to be essentially similar to the type present in children it is ***not really*** so, for in the former the pathological process of the disease is going on in a different set of tissues, viz., the ***muscular***, as witness the lactic acid sweats.

Clinical Evidence upon this Theory.

I thought it might be of interest to see whether the rare cases which have been recorded of rheumatic hyperpyrexia at an early age presented the features of rheumatism of the ***adult*** type, ***i.e.*** with joint-pains and sweatings, rather than the form characteristic of ***childhood*** with these phenomena in comparative abeyance. I can find ***only four*** cases mentioned in which hyperpyrexia ensued in patients with acute rheumatism under the age of fourteen, two described by Barlow (1),[1] a boy aged ten and a girl of thirteen respectively, one mentioned by Donkin (10)[2] at the age of twelve, a boy, and a fourth in the Clinical Society's collection (7),[3] that of a girl aged thirteen; and it is rather remarkable and significant that the notes of these cases record respectively the facts of (1) "pains in large joints"; (2) "severe rheumatism affecting many joints"; (3) "patient lying bathed in sour-smelling sweat and screamed with evident pain on movement of his limbs"; (4) and lastly during the hyperpyrexia "joint-pains diminished" and the skin subsequently showed "return of sweating." By the great kindness of Professor Fraser I was enabled to see the notes of another—a ***fifth*** case of hyperpyrexia in a patient aged twelve, a girl whom he had under his care in the Royal Infirmary in October 1896. In a subsequent portion of this paper I shall avail myself of his kind permission to allude to the chief features of the case in illustration of another point; here I wish merely to note that the record of the clinical history brings out the very same facts as to the rheumatism in her case also having been of the ***adult*** type. She is described as having on admission "characteristic rheumatic sour-smelling sweating," while the "knees, ankles and wrists are painful and the ankles are swollen."

So far, then, as one is justified in drawing conclusions from such a small number of cases, the evidence thus adduced

[1] p. 512. [2] p. 212. [3] p. 312.

would appear to support the theory of Maclagan, and suggests the further proposition (1) *that hyperpyrexia in rheumatism is a phenomenon whose occurrence depends rather upon the* TYPE *the rheumatic process assumes than upon the exact* AGE of *the sufferer;* and (2) that *instead* OF VISCERAL "*complications*" *or manifestations of rheumatism being causally associated* as some have supposed *with the occurrence of hyperpyrexia, it would appear that the* ARTHRITIC *phenomena are probably the essential features for its production.*

While fully conscious of the relatively minor importance of these conclusions I ventured to regard them as not altogether without interest, and all the more worthy of recording in view of the very great dearth of any reference in the literature of the subject to this problem of the *causation* of this *absence of hyperpyrexia in rheumatism in children.*

Mortality: Prognosis.

That hyperpyrexia in rheumatism has an exceedingly grave significance is a point which has been more than once alluded to. The *average mortality* of *acute rheumatism* is probably about 3%; the Collective Investigation Report (8) [1] gives it as 3·3%, and the Clinical Society's Report (7) [2] as 2·6%, calculated from 1300 cases; while I notice in the recent volume of the Edinburgh Hospital Reports (12) [7] that the total cases of acute and subacute rheumatism treated in the Royal Infirmary during the five years 1891-96, amounting to 837, contains twenty fatal instances, giving an average mortality of 2·3%.

The importance of hyperpyrexia as an element contributing to this mortality, is vividly brought out when Fagge's statement (13) [4] that "at least 14 patients died of hyperpyrexia in acute rheumatism in Guy's Hospital between 1870 and 1877," is compared with the figures he gives on the same page showing the total mortality of rheumatic cases between these years to have been 38. Thus of these 38 deaths from rheumatism nearly 37% were due to hyperpyrexia alone. This undoubtedly overstates the mortality from hyperpyrexia in rheumatism, for we have already seen that the period Fagge deals with includes those very years during which hyperpyrexia was shown by the Clinical Society's Report (7) [5] to be unusually prevalent. But the much smaller percentage given by Bryant (3),[6] that of the fatal cases collected by him, 17% owned hyperpyrexia as the cause of death, is still sufficiently convincing proof of the importance of this complication in producing the death-roll of acute rheumatism.

[1] p. 401. [2] p. 268. [3] Vol. v. p. 299.
[4] Vol. ii., p. 697. [5] p. 263. [6] p. 402.

It is not surprising, therefore, when we come to consider the mortality of the hyperpyretic cases themselves, to find that this is very high. In the Clinical Society's Report, based on 67 cases, it is given as 49·2%, while Bryant, dealing with 83 cases, gives it as even higher, viz., 56·7%, but it must always be borne in mind that he includes only cases with temperature "above 106°," while out of the list of 34 *recoveries* in the Clinical Society's Report (7),[1] no fewer than 20 showed a temperature record *not exceeding* 106°, the deaths for the same temperature limits numbering only 8. That the mortality of cases of hyperpyrexia is greatly influenced (1) by *the height to which the temperature rises* is clearly brought out, though this latter is rather the indication of the severity of the case than the cause of it. Thus while in the Clinical Society's cases, none of the patients with a temperature over 110° recovered, and of cases between 108·1° and 110° only 2 recovered and 13 died, there were 8 recoveries to 3 deaths in the cases with temperatures between 106·1° and 107°. That such should be the case is only to be expected, for a case with such a high temperature as 109° or 110°, almost certainly implies that the disturbance of the cerebral functions has been of longer standing, and has thus caused more serious damage before treatment is applied, than in cases where the temperature is kept from rising beyond more moderate limits.

This suggests the second important factor (2) in influencing the mortality, viz., *the treatment employed for the cure of the hyperpyretic condition.*

Prior to the adoption of the various methods of application of cold for this object, the cases were almost uniformly fatal. After Wilson Fox (14), however, clearly demonstrated not only the existence of the hyperpyrexia, but the undoubted benefits of cold in its treatment, cases of recovery after even high temperatures began to be recorded. It was not till several years later, however, that the facts became generally recognised, that not merely was the application of cold a successful method of treatment, but that practically it was the *only* satisfactory method, and that treatment by drugs only meant the loss of valuable time during which the temperature might rise still higher with greater danger to the patient. And not only so, but the wider acceptance of such views has resulted in the employment of such measures as a *prevention* of the condition, so that at the onset of the prodromal symptoms, cold is employed in the treatment of the patient before the temperature has attained extreme limits. This adoption of prophylactic treatment *should* result in not merely a reduction in the *frequency* of the complication (a point already referred to), but also

[1] p. 298.

in a *lowering of the percentage mortality* of the hyperpyretic cases.

I thought it might be interesting to see if an examination of the various collected cases brought this out, and I have gone over the records for this purpose, taking as the dividing date between the early and later methods of treatment the year 1882, this being the year of the publication of the Clinical Society's Report on hyperpyrexia in acute rheumatism, which first brought the subject prominently before the profession. This date has the further advantage of dividing equally the thirty years from Ringer's first published case down to the present year into two periods of fifteen years.

The 96 cases taken for this purpose consist, as previously mentioned, of Bryant's collection of 83—all of which, it should be remembered, had a *temperature of* 106° *or more*—with 8 more published cases (collected from various journals) subsequent to the date of his article, as well as the 5 unpublished cases described in this paper by myself. The analysis of these cases brings out the result shown in the annexed table :—

CASES OF HYPERPYREXIA IN RHEUMATISM.

	1869-1882.	1883-1897.
Total cases . . .	49	37
Fatal	28	20
Percentage mortality .	57%	54%

[Ten cases in which the date of the hyperpyretic attack is not given are excluded.]

This rather surprising result, then, is brought out that the mortality, as calculated from the recorded cases to which I have got access, is practically the same in the two periods chosen for comparison. Now does this really mean that the mortality of this condition is *as great nowadays as formerly?* Such a conclusion, I think, would be erroneous, and for the following reason. Cases of the condition are not now so frequently recorded as formerly, the treatment by application of cold having become so recognised as the essential thing that cases of recovery from rheumatic hyperpyrexia are no longer published as noteworthy. A similar state of matters is more or less noticeable in connection with the introduction of any new remedy, *e.g.* diphtherial antitoxin of which the cases which are now recorded (as compared with the time when the treatment was first introduced) are the *failures* rather than the successes in its application. So in regard to hyperpyrexia,—it is the *unsuccessful* rather than the successful, instances which are now published. It is from the *continuous records* of hospital cases that one would perhaps get the truest estimate of the actual mortality of the condition,

though even these are apt to be vitiated, as we have seen, owing to severe cases being sent there for treatment often in practically a moribund condition. Moreover, it is evident from an examination of the records of the cases that the employment of cold in the treatment of this grave complication is still *by no means universal*, so that one cannot draw really any distinction between the older and more recent results in this manner, for in several instances various antipyretic drugs are still relied upon to remedy the condition.

While, then, a consideration of the statistics above referred to does not bring out any material reduction in the mortality amongst hyperpyretic cases, there is little doubt that the prognosis —when various considerations are taken into account—is *better* amongst those which are treated by *cold* applications than by other methods. This is brought out in the Clinical Society's Report, which points out (7) [1] that while the mortality is practically the same in both groups if the "*bathed*" cases are compared with the "*non-bathed*," yet, when along with the question of treatment is combined that of the *degree of hyperpyrexia present* the advantage in the *former* group is clearly brought out. Thus—

	Total.	Died.
Of the "non-bathed" cases with temperature above 106°	5	5
„ "Bathed" „ „ „ „ „	34	20

giving a mortality of 59% in the "*bathed*" cases as compared with 100% in the case of the "*non-bathed*."

So far as concerns the influence of *age* upon the mortality of hyperpyretic cases but little evidence can be deduced, an examination of the 96 cases showing that fatal cases appear as frequently amongst young adults as amongst those in later years, due allowance being made for the greater preponderance of rheumatism, and especially "first attacks," in adolescent life.

The importance attached by the Clinical Society's committee in their report to the prognostic significance of *early onset of the delirium*, as indication of an especially *grave* type of the complication, has already been referred to.

One other matter in regard to the immediate prognosis is this—Is there not a possibility of a patient who has been cured of his hyperpyrexia dying in consequence of some after-result of the treatment employed? Thus, in the case I related at the beginning of this article,[2] there was abundant evidence that, subsequent to the employment of cold for the initial hyperpyrexia, acute nephritis developed (as shown by the blood and casts present in the urine). Now, is it not possible, if indeed it be not probable, that this was largely the result of the chilling of the surface of the body, especially in the case of a patient the ex-

[1] p. 286. [2] *Scot. Med. and Surg. Jour.*, iii. p. 522.

cretory functions of whose skin were manifestly out of order? No doubt the comparatively innocuous results of the employment of cold baths, &c. in the treatment of other diseases, such as enteric fever, might be adduced as evidence against such a suggestion; but there is this important difference, that in these latter cases there is no failure of the eliminative functions of the skin as is so frequently the case in patients with rheumatic hyperpyrexia. Of the extreme gravity of such a complication as acute nephritis (however induced) in a hyperpyretic case there can be little doubt, for treatment of acute Bright's disease in a patient whose sweating apparatus is out of order holds out but little prospect of success. We must therefore never lose sight of the fact that, having rescued our patient from the primary danger of the hyperpyrexia, his ultimate recovery may be greatly hampered, if not rendered altogether impossible, by reason of such grave consequences of the necessarily severe treatment adopted.

As regards the *ultimate* prognosis in hyperpyretic cases, in addition to the risk of these sequelæ becoming permanent, it is, I think, possible that more or less serious damage to the cerebral functions may result apparently from the high temperature. Certainly one of my cases (A.S.) showed for a considerable time that condition described by our Scotch phrase, a decided "want."

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Meetings of Societies

Edinburgh Medico-Chirurgical Society

THE second meeting of the seventy-eighth session of the Medico-Chirurgical Society of Edinburgh was held on the 7th December, —Sir J. Batty Tuke, president, in the chair.

Dr Rainy showed a patient, a painter, with probable muscular dystrophy of about nine months' duration, the case in some respects resembling Erb's type, there being atrophy of the muscles of the arm, especially of the triceps, deltoid, and lower part of the pectoralis major, and of the biceps to a less extent; there was also some affection of the shoulder-joint.

Mr Stiles showed a girl, aged four years, six months after reduction of congenital dislocation of the hip by the method of Lorenz, in whom a very successful result had been obtained. Mr Stiles remarked that a previous case had failed owing to insufficient force being applied, but that the operation should be successful if the patient is not over four years of age.

Mr Cathcart showed a patient in whom symptoms of myxœdema were subsiding after removal of goitre. The tumour, a colloid degeneration of the left lobe of the thyroid, had been removed for dysphagia and interference with respira-

tion, and the symptoms of myxœdema had subsided so markedly since the removal of the tumour that treatment by thyroid had not been required.

Dr Russell and Mr Cotterill showed a brain illustrating a breach between the visual word centre and motor speech centre, and from which a gliomatous tumour of the lower part of the left ascending parietal convolution had been three times removed. The patient was unable to read, but she saw and understood letters and words; the auditory word centre and the motor speech centre were intact. There was right hemiparesis and hemianæsthesia, and right homonymous hemianopsia, and there was great pain, which was much relieved by the operation. Mr Cotterill, who operated, said the tumour was at once exposed in the situation diagnosed, and, being an infiltrating glioma, it could not be shelled out, as was often the case with sarcomata. The pain was relieved very markedly and the patient made a good recovery. The tumour recurred, and the symptoms were again relieved by operation; but after the third operation the patient sank very quickly.

Mr Stiles exhibited the clavicle, humerus, and femur, showing multiple fractures from a rickety and syphilitic child who was admitted to hospital in a very neglected state and without available history. Skiagrams by Dr Rainy showed the fractures and imperfect ossification very well.

Dr Scott Skirving showed a large ischial bursa about the size of a cocoa-nut, which contained several ounces of fluid along with a number of fibrinous discs resembling gun-wads. It extended under the neighbouring muscles and was adherent to the sciatic nerve. Dr Skirving also exhibited specimens illustrating complete rupture of the kidney and rupture of the liver. The patient had had much internal hæmorrhage but never lost consciousness, and at first presented little sign of serious injury.

Mr Cathcart showed a specimen of small intestine sutured for gangrene six months previous to the death of the patient from cancer of the stomach. It had been united by two rows of silk sutures, and a ridge had formed internally, which, on microscopic examination, showed that while the peritoneal surfaces had firmly united, the intestine had otherwise retained much of its normal structure.

Dr F. D. Boyd read a paper "on pulmonary regurgitation," in which he related two cases that had recently come under his notice. In the first of these the condition was due to a subacute septic endocarditis of the pulmonary valves, and though a bacteriological examination of blood drawn from the spleen gave a negative result, the patient was much benefited by the administration of antistreptococcic serum. In the second case the patient developed symptoms of pulmonary regurgita-

tion subsequent to mitral stenosis. In discussing the causes of pulmonary regurgitation, Dr Boyd said cases, not congenital ones, were divisible into (1) those due to inflammatory changes in the cusps of the valve, (2) those depending on dilatation of the pulmonary artery. The condition was a rare one, and the diagnosis was not easily made, as the murmur was confined to a very limited area; in his opinion it was not affected by respiration.

In the discussion which followed—

Dr G. A. Gibson said he had only had the opportunity of observing four undoubted cases of this condition.

Dr Russell remarked that he had not seen anything of this condition clinically, although he had carefully and long searched for it; but he had had cases when he was pathologist to the Infirmary in which aortic regurgitation had been diagnosed and in which no disease of the aortic valves was found, and these, he suggested, were sometimes pulmonary in origin, for they were present in cases of mitral disease. He doubted if *ante-mortem* regurgitation from dilatation of the pulmonary artery could be demonstrated *post-mortem*. The rarity of the condition was due to the giving way of the right ventricle leading to tricuspid regurgitation, and so reducing the pressure in the pulmonary artery; and without high tension regurgitation was impossible.

Dr James Ritchie said it was difficult to distinguish those cases where there was mitral stenosis with a post-diastolic murmur from pulmonary regurgitation.

Dr Ronaldson and Dr Watson thought the lesion was not so rare as usually supposed.

Dr Boyd, in reply, said he thought a dilated pulmonary artery could be detected *post-mortem* if sufficient to cause regurgitation, and that for diagnosis the purity of the second sound must be impaired to distinguish this murmur from one at the mitral orifice.

Dr Gulland then read a paper on "Sulphonal Poisoning," which appears in this Journal in full.

The President, Dr Craig, Dr W. Russell, and Dr Church made remarks on the paper.

Dr Gulland, in replying, said that about thirty fatal cases, acute and chronic, had been recorded.

Edinburgh Obstetrical Society

THE second ordinary meeting was held on December 14th—Dr Halliday Croom in the chair.

Among other interesting specimens shown was a uterus removed by Dr Haultain for *Deciduoma Malignum*. The patient

in this case was aged twenty-eight years. In September last, when three months pregnant, she had a hæmorrhage and ten days later delivered herself of a myxœmatous male. Convalescence was rapid, though she remained somewhat anæmic. A fortnight later she had bleeding again, which recurred at intervals for five weeks, when Dr Haultain saw her. She was then very anæmic, the uterus was enlarged, the os somewhat dilated, the mucous membrane irregular and particularly soft over one point near the fundus. Curetting was associated with severe hæmorrhage for which the uterus was packed. The scrapings on microscopical examination showed malignant growth—sarcomatous or deciduomatous. The patient was now said by her friends to be quite well; but three weeks later bleeding again appeared, and an examination was followed by a severe hæmorrhage. Two days later the uterus was removed by vaginal hysterectomy, the operation presenting no difficulties. Recovery was perfect—the patient being up and about in three weeks. The uterus on examination was enlarged, and showed a tumour resembling a blood clot projecting into the cavity from the right cornu; the mucous membrane over the rest of the uterus was apparently healthy. Sections of the tumour showed typical large multinucleated cells.

Notes of a case of *chronic inversion of the uterus* were read by Dr J. W. Struthers. Treatment by Aveling's repositor had failed; Dr Berry Hart therefore performed a posterior colpotomy, and by fixing and dilating the constricting cervix with two fingers from the peritoneal aspect, effected reposition more easily than was expected.

A very interesting *synopsis of a first series of* 110 *abdominal sections for pelvi-abdominal disease* was given by Dr Haultain. These included thirty-five ovariotomies, two operations for cyst of the broad ligament, three hysterectomies, and five cases of extra-uterine pregnancy, with the total wonderfully low mortality of 2, that is to say, 1·9 per cent. In the technique of these operations aseptic methods were employed when possible, though antisepsis was followed by equally good results—1-40 carbolic being used for the hands, instruments and towels. Throughout the series special care was directed to the control of bleeding, the blood supply to an affected part being, when possible, cut off by ligature previous to interference. Dr Haultain attributes the absence of shock in many cases to this procedure. Portions of cyst wall adherent to hollow viscera were usually left in situ after scraping, and invaginating and stitching the edges. For irrigation hot aseptic saline [illegible] was preferred to plain sterile water, as being better borne by the delicate peritoneal epithelium. Drainage, when necessary, was in most cases effected through the posterior fornix—the abdominal

wound being stitched up. With the important subject of post-operative treatment Dr Haultain dealt fully, giving as the main indications—to preserve the strength, to promote comfort, and to prevent intestinal paralysis. As a routine practice a nutrient enema is given before the patient leaves the table, and is repeated at intervals if sickness prevents nourishment being taken by the mouth; otherwise tea, coffee, or dilute meat juice are given in small quantities by the mouth within a few hours after the operation. After twenty-four hours, if there is no sickness, tea, gruel, soups, and nutrient jellies may be given frequently in small quantities. Milk and aerated drinks are to be avoided. On the third day the patient may be put on ordinary light diet. When the pulse is weak, or as a routine practice in patients over fifty years, strophanthus may be given from the start. Great thirst may be relieved by a large enema (one pint) of normal saline solution, the lips and gums being moistened with glycerine and water. Pain in the back is best treated by raising the knees on pillows and, if necessary, by a single dose of morphia. The patient should also be turned on the side several times in the first forty-eight hours; this, in addition to easing pain, promotes absorption from the peritoneum. Flatulence will usually give way to an aperient on the third day, or to a large turpentine enema with gentle massage; if this fails, free purging with calomel and salines is indicated.

Repeated ectopic pregnancy in the same patient was the subject of a paper by Dr Haig Ferguson. This rare condition has been recorded by only fourteen observers. Puech gives 8 cases of repeated extra-uterine gestation out of a total of 180 cases (4·4%), while Dührssen gives 2 out of 37 (5·4%). The case recorded by Dr Ferguson was twenty-nine years of age, she had had two previous children, both dying within an hour after birth. In January 1894, after four months amenorrhœa, she was seized with violent abdominal pain on the right side, with shivering; there was no discharge of blood clot or membrane. After a week or so she began to recover; menstruation returned, and was regular for four years, when, after having missed two months, she was seized with pelvic pain and retention of urine. Examination now discovered a fluctuating tender swelling of the size of a goose egg on the left side, the uterus was enlarged and pushed to the right. A decidual membrane was passed a few days later. Operation revealed a typical extra-uterine gestation of about three months on the left side, which was easily removed. On the right side was an irregular nodulated swelling attached by a narrow pedicle to the dilated and tortuous tube. This was removed, and proved to be a lithopædion containing the bones of a four months' fœtus, and thus corresponding to the period of amenorrhœa four years previously.

Dr Ferguson discussed the question of removal of the second tube and ovary in all cases of ectopic gestation, and considering the percentage of cases in which the accident is repeated, rather inclined to this procedure.

Glasgow Medico-Chirurgical Society

AT a meeting on Friday, December 2nd, Dr Daniel M'Kenzie, Larkhall, read a paper on "Endemic Goitre in Lanarkshire, with Observations on the Pathology of the Disease," and showed microscopic specimens. This was a very interesting paper. The chief thesis put forward by Dr M'Kenzie was that in endemic goitre there is a pure hypertrophy of the thyroid gland, to meet some sort of demand. Amongst various illustrations in support of this he referred to the iodine treatment, which was frequently successful. This success would then be explained by the fact that the thyroid secretion is an iodine body, and under treatment by iodine any thyroid gland, hypertrophied to meet an increased demand, would have an opportunity of subsiding. Dr M'Kenzie's views also included the thesis that goitre is caused by a *contagium vivum*, endemic in certain soils.

Dr Lindsay Steven heartily congratulated Dr M'Kenzie on the very interesting study he had brought forward.

Dr Alex. Robertson agreed that a fair case had been stated for the cause of endemic goitre being a *contagium vivum*.

Dr Workman remarked that in eight years he had not added a single specimen of "endemic goitre" to the museum at the Royal Infirmary. No case, that was to say, had reached the *post-mortem* room. If the disease was so frequent in Lanarkshire, this was remarkable.

Dr Clark believed most of the cases seen in Glasgow were regarded as sporadic, but he thought that Dr M'Kenzie had given a stimulus to the investigation of the locality from which such patients came. He thought there had been no real proof [illegible] of a *contagium vivum*. How did the disease not occur [illegible]?

Dr R. M. Buchanan enquired as to the presence or absence of mental [illegible] or apathy in the cases, and whether [illegible] in a few years. His own experience [illegible] that this occurred. He considered that the contrast between endemic and exophthalmic goitre had been well brought out. He thought there were many [illegible] and approved of [illegible] he supposed that the [illegible].

Dr [illegible] that he had never admitted a case

to his wards, but they had appeared from time to time at the dispensary.

Dr M'Kenzie, in a brief reply, stated that he had found no mental defect in any of his goitrous patients. In further support of his theory, he found that goitrous patients could stand a larger dose of thyroid gland than ordinary people.

Dr J. Lindsay Steven read notes of "Two Cases of Fatal Hæmatemesis due to Pin-hole Erosion of Arteries," and showed specimens.

He had recently had a number of severe cases of hæmorrhage from the stomach, and two of them had proved fatal. In neither of these was there the ordinary simple ulcer. Such simple ulcer, or malignant ulcer, or hyperæmia from portal obstruction, were of course the common causes of hæmatemesis; but the two cases he was to narrate were of a different class.

In the first case, death had occurred four weeks after the first onset of gastric symptoms, such as anorexia, pain after food, and vomiting. There were several attacks of hæmatemesis latterly. These ceased under treatment, but she died later from exhaustive diarrhœa. At the examination there was found a very superficial abrasion about ¼ to ⅛ inch in its diameters. In the middle of this a pin-hole opening was found, which led directly into one of the primary branches of the gastric artery. In the intestine there was slight catarrh; no blood.

In the second case the left gastro-epiploic artery was found perforated in the same way. This patient was a vanman, aged thirty-eight years, who seemed quite healthy, and had not been troubled with his stomach before. He was seized with hæmatemesis in the street, and before his death it was calculated he must have lost about half of the total blood in his body. As a last resource laparotomy had been performed by Mr Pringle, but no guide to the bleeding point was found, and nothing could be done. *Post-mortem* there was found a very small depressed area, between three and four inches from the pylorus, and one and a half from the greater curvature, and in this depression was an oblique opening directly into the artery.

Dr Lindsay Steven especially drew attention to—

1. The profuse nature of the hæmorrhage, especially in the second case, in which there were no antecedent symptoms at all. Such cases would not be so liable to repeated attacks of hæmatemesis at intervals.

2. The obvious implication of a large arterial branch—this was so in both cases.

3. The comparative absence of symptoms beforehand.

As regards the causation he had no explanation to offer. Possibly a small aneurism had formed. The superficial situation

of the vessel explained why the bleeding was so severe and repeated. Dr Murchison had reported one case similar to these.

4. With regard to the treatment of such cases, would the surgeon be able to help by finding the bleeding point and securing it? Statistics of the most likely situations for perforation into arteries would be useful so as to guide the surgeon.

Dr Clark felt indebted to Dr Steven for drawing the attention of surgeons to such cases. The vessel must be of some size, and near the greater or lesser curvature. If no gross ulcer was found the proper step would be to investigate the vessels along the two curvatures. This would require a large opening into the stomach, and even then there would be great difficulty in finding the bleeding point.

Dr Workman thought that in these cases there had probably existed before a small shallow ulcer, and that this had left a weakness in the wall of the vessel.

Dr Alex. Robertson and Dr Dunn also remarked upon the cases, the latter asking for details of the injection of saline fluid into the areolar tissues, which had been employed as part of the treatment.

Dr Middleton suggested that the endoscope might be useful in locating the bleeding point.

Dr Adamson referred to the comparative absence of symptoms beforehand, and said that this would support the view that these cases were, after all, nothing else than the ordinary simple ulcer of the stomach. Such an ulcer had to begin somewhere, and if it so chanced that it started in the mucous membrane directly over a large artery, then early in its course, and perhaps before there were any symptoms of the ulcer as such, the artery would be perforated, and death ensue, as occurred in Dr Steven's case. Such cases must necessarily be rare.

Dr Steven admitted this to be a feasible explanation, and briefly replied to Dr Dunn and others.

Aberdeen Medico-Chirurgical Society

A MEETING of this Society was held on the evening of Thursday, 1st December, Dr T. Milne, President, in the chair.

Dr J. L. Salmond, M.A., was elected a member.

Dr Ferdinands read notes of *Two Cases of Exophthalmic Goitre*, in which cycling was probably the exciting cause. The first case was that of a young lady, aged twenty-five, who after a day's excessive cycling suffered from faintness and severe palpitation. A few days later, a friend drew her attention to the fact that her eyes "bulged"—a symptom which the patient was quite certain never existed before. Examination revealed

enlargement of the thyroid and the other symptoms of Graves' disease, well marked. The second case was also that of a young lady, aged twenty-two, who stated that she had never been very strong but learned to cycle last spring. She felt no ill effects until one evening, when, returning home against a head-wind, she "lost breath" and had to walk about a mile before reaching home. She too suffered from severe palpitation all night. Next morning her parents noticed that her eyes were more prominent than usual, and, as this symptom and the palpitation continued, the patient sought advice. Examination showed well-marked Exophthalmos: the thyroid was only slightly enlarged. A third case was also mentioned but, as the medical attendant expressed doubt as to cycling being the exciting cause, it was not included.

Dr Ferdinands regretted the absence of reliable notes of the previous histories of the two first cases and also that they were not seen until months after the supposed onset of the trouble. He therefore only felt justified in merely suggesting that—given the predisposition—the over-exertion of excessive cycling may induce Graves' disease. He thought that cycling should not be indiscriminately recommended. Touching on treatment, Dr Ferdinands said that he found thyroid extract useless, and that the best results were secured by absolute rest and quiet.

An interesting discussion followed, bearing on various points connected with the aetiology, pathology and treatment of Exophthalmic Goitre.

Drs John Innes and Ashley W. Mackintosh exhibited a *Case of Idiopathic Muscular Atrophy.*

The patient was a boy aged eleven, the oldest of a family of five. All the others were quite healthy, and the family-history was quite negative, as regards any similar affection: there was a history of insanity in a collateral branch of the family. The patient had never had "fits" of any kind or any acute disease. Nothing abnormal was noted till he was about five or six years of age, when it was observed that he "fell very easily" and could not run about like other children. Present condition: mentally, he is fairly bright although not "quick at lessons." The waddling gait, the method of standing—with well-marked lumbar lordosis, belly far forward and feet wide apart—the mode of going up and down stairs, and the attempts to rise from the ground are all typical of Pseudohypertrophic Muscular Paralysis. The paresis of the legs is practically confined to the flexors and extensors of the hips and extensors of the knees, the lumbar muscles also being weak, while, in the arms, far the weakest movement is depression of the raised arms: the position of the scapulae when the arms are hanging down, shows weakness of the rhomboids, but there does not appear to be any serratus

paralysis. There is marked wasting of the extensors at the knee and of the latissimus dorsi and the sternocostal portion of the pectoralis major, and also of the clavicular part of the sterno-mastoid on each side. In the legs, the calves, sartorii(?), glutei and lumbar muscles are large, probably (pseudo-) hypertrophied: in the arms, the infraspinati alone seem distinctly larger than normal, although the deltoids stand out rather prominently. There is no affection of the face: the pupils are large and react sluggishly, if at all to light. The knee-jerks are lost.

Forfarshire Medical Association

THIS Society met in the University College, Dundee, on Friday, December 2nd, at 4 P.M.—Dr J. Mackie Whyte, vice-president, in the chair.

Dr Whyte showed a boy aged twelve, who was admitted in June 1896 to the Dundee Infirmary for ascites. He had been a delicate child and had suffered from a chronic otorrhea—otherwise nothing marked till onset of this illness six weeks previous. There was evidence of lardaceous disease in liver, spleen, kidneys, and intestines. In the liver too there seemed to be deep fibrous constrictions. The abdomen was tapped repeatedly till October 1897, the amount of fluid drawn off latterly was 324 oz. in nine days. The urine up till that time was very scanty, but after the tapping in October it suddenly increased in quantity, and the fluid ceased to gather in the peritoneum.

The cause of the disease was apparently the otorrhea, syphilis being excluded with a fair degree of certainty. The reason for the cure was quite doubtful.

Dr Whyte showed a brain from a case of purpura with hæmorrhage into the base, which seemed to have begun in the optic thalamus. The patient had numerous hæmorrhages all over the body. There were no symptoms localising the cerebral hæmorrhage from which she died.

Mr Greig showed part of a catheter removed from the bladder, by suprapubic cystotomy, of a man aged sixty-three, suffering from an enlarged prostate.

Professor Kynoch showed a specimen of gonorrheal salpingitis and abscess of the ovary removed by coeliotomy.

Professor Kynoch read a paper on the recent improvements in the treatment of vesical fistulæ.

In this paper he described the various operations suggested and performed during the last fifty years for the treatment of small, medium, and large fistulæ, where there was destruction of tissue.

He gave notes of a case of his own in which he had obtained a successful result by paring and suturing the edges of the fistula.

Lastly he dealt with vesicouterine fistulæ, in the treatment of which he thought that, when closure of the os uteri was the only available treatment, the ovaries might be removed at a subsequent operation.

Professor MacEwan, Mr Greig, Dr Buist and the Chairman all spoke on the paper.

Professor Kynoch briefly replied on the discussion.

Dr M'Gillivray gave a short paper on the treatment of iritis, in which he emphasised the importance of the early and energetic use of atropine combined with cocaine in the form of an ointment.

This ointment he recommended should be applied every hour or oftener till all syncehiæ were broken down. He also advocated the internal administration of mercury, hot fomentations and leeches to the temple to allay severe pain.

Dr Duncan spoke on the internal treatment, which he did not think was sufficiently emphasised in the paper.

The Chairman also spoke.

Dr M'Gillivray, in reply, said the paper did not aim at, though approving of, etiological treatment.

Edinburgh Royal Medical Society

2nd December.—Dr Herring in the chair.

Dr G. F. B. Simpson delivered his presidential address, in which he gave an account of the remarkable Chamberlen family, one of whom invented midwifery forceps. Dr Simpson expressed the opinion that the invention was the work of Peter Chamberlen, who came from Paris to London in 1569, and that it was concealed for about two centuries. It was not till 1813, many years after the last Chamberlen had passed away, that the instrument was discovered in a secret room in the old manor-house which had belonged to the family. Dr Simpson was cordially thanked for his address.

Dr Eason read a communication on "The Theory of the Pathology of Chorea." After reviewing several theories, he advanced one of his own, to the effect that the disease is due to an irritable condition of the cortical motor cells, resulting from their greater freedom from the control of the highest nerve centres. The involvement of this hypothetical mental realm was primary, the motor disturbances being subsidiary, and the result of defective inhibition. This view is favoured by the psychical phenomena associated with the disorder.

9th December.—Dr Cooper in the chair.

Mr Barclay showed a girl with various abnormalities—rickety head, fore-joints in the clavicles, scoliosis, lordosis, and congenital dislocation of the hips.

Dr Bowie described two cases of intra-cranial tumours.

Mr James described a case which was diagnosed as perforated gastric ulcer. There was a history of the vomiting of a dark fluid with coincident onset of intense pain in the abdomen. The symptoms were those of acute peritonitis. Exploration, however, showed gangrene of part of the gall-bladder with inflammation and obstruction of its efferent duct. Patient recovered.

16th December.—Dr Herring in the chair.

Mr Cathcart gave a lantern demonstration on "The Anatomy and Pathology of the Prostate," and also discussed the relationship between it and the testicle.

Dr Struthers read a dissertation on "The Treatment of Fractures."

New Books and New Editions

The Good Regent. A Chronicle Play. By Professor Sir T. Grainger Stewart, M.D., LL.D. William Blackwood & Sons. 1898. Price 6s.

EMINENT physicians who in former days strayed into the walks of literature have usually done so simply to gather flowers and present them to their readers. Sir Thomas Grainger Stewart speaks modestly in his preface. But his aim is a rather high one. Sixty years ago Henry Taylor, when publishing "Philip Van Artevelde," recalled the English world to the possibility of a kind of poetry—and especially historical poetry—which should be not mere sentiment and sugar, but should appeal to masculine and instructed minds, who prefer to deal with the real problems and complexities of life. And in that kind of historical study this chronicle play is an undoubted success. It is no one-sided eulogy of a man, still less of a party. The first words of Lord James reveal the spark of ambition natural to powerful natures.

> "Why should I not be King?
> The work were good, for I should turn to friends
> Those who for ages have been deadly foes.
> Both lands should rest."

And all through that wonderful age the play and interaction of forces upon the central figure go on, for good or for evil, and

are here conscientiously and vividly described. It is the drama of a man, but it is also that of a time; and those who have special knowledge of that time, with all its historical questions, will be the first to acknowledge the merit of the study here presented, even when they do not agree with its conclusions. But do not such lines as the following remind us of Henry Taylor's view, that a poet has an "understanding heart" not for the past only, but for the present?

"MORAY:

"They rule the best who long have hoped for power.

"LETHINGTON:

"Yes, that is true,
And more. The day may come when in the state
Monarchs may yield up power, and Ministers
Shall guide the helm. Each in his turn shall be
The chief adviser of his sovereign.
In office he shall rule, and when betimes
Another takes his place, he'll set himself,
In the cool shades reposing, to devise
Plans to be acted out when Fortune's wheel
Shall in its turning give him power again."

Diseases of the Stomach, their Special Pathology, Diagnosis and Treatment: in three parts. By JOHN C. HEMMETER, M.B., M.D., Clinical Professor of Medicine at the Baltimore Medical College; Consultant to the Maryland General Hospital. With many original illustrations, a number of which are in colour. Roy. 8vo, pp. xviii. 788. London: H. Kimpton. Price 30s. net.

DISEASES of the stomach have within recent years had much careful and elaborate investigation devoted to their elucidation and treatment. Formerly the diagnosis was crude and the treatment largely if not wholly empirical; and it is still open to question whether the one has improved in precision or the other in scientific understanding save in the hands of a few. The vast majority of cases of gastric complaint are so readily rectified by simple methods and domestic remedies that the minority is apt to be regarded as too troublesome or too hopeless to spend much time in their investigation, and yet upon

this alone can a reasonable treatment be based. The more troublesome and therefore the more difficult cases probably tend to become more numerous, and patients are not so disposed as they once were to accept their gastric discomforts with resignation but seek more expert advice when their ordinary resources fail them. It is of course the occurrence of the troublesome and difficult cases which has led to the great amount of careful investigation that has been devoted to gastric function and to the various disorders of it as well as to the indications that disordered function may afford of gross and more mortal disease. The successful investigation of disease has always to start with a physiological standard, and this starting-point has been fairly defined in the case of the stomach, although it is not assumed that the last word has been said on this matter, or that a variety of difficult questions do not yet remain for solution. From the foundation already laid, it is, however, possible to investigate individual cases with a measure of detail and to obtain results which are aids to precision in diagnosis and may be of incalculable advantage in treatment. To obtain these results, however, we become more and more impressed with the fact that much clinical acumen backed by a large and varied clinical experience and an unbiassed judgment is required.

The book before us realises more fully than perhaps any other in the English language, the ideal we have formed of what a work on diseases of the stomach ought to be. The first part consists of nineteen chapters on the Anatomy and Physiology of the Digestive Organs; and on the Methods and Technics of Diagnosis. The second part is devoted to the Therapy and Materia Medica of Stomach Diseases in eleven chapters. The third part is entitled The Gastric Clinic, and contains thirteen chapters. This arrangement will be found useful and practical, and the author has shown in each division an acquaintance with his subject and with the best literature on it which is deserving of the highest commendation, while in all the clinical aspects of his work he shows a wealth of experience and of clinical insight which give the book an unmistakable quality and tone.

When there is so much that is admirable it would be but hypercriticism to refer in detail to what we on this side call *Americanisms* and which do not please either eye or ear.

We are, however, getting accustomed to them. Neither have we yet adopted all the mechanical means used in America for the physical investigation of the stomach and the pylorus, some of which we are not indeed impressed with the essential necessity or even value of. It is probable that in America there are more cases of a class in which these investigations are necessary, and that patients there submit more readily to those methods than they would here. But even putting those aside, the practitioner will find in this book the kind of information and guidance which, if he can but apply them, will be a benefit to himself as well as to his patient.

Medical Diseases of Infancy and Childhood. By DAWSON WILLIAMS, M.D., and F.R.C.P.Lond. Post 8vo, pp. xvi. 634, with 18 plates and 18 illustrations in the text. London: Cassell & Co., Ltd. 1898. Price 10s. 6d.

THERE could be no surer indication of the increased interest which is at present taken in the diseases of children than the number of text-books on that subject which have recently appeared. The object of the present volume is "to give to young practitioners, and those who have not previously paid much attention to the subject, a guide to the clinical study of disease as it occurs in infancy and childhood," and we may at once say that the author has been very successful in his task. It must be admitted, however, that the book is somewhat unequal, and whilst the parts treating of the infectious and general diseases and those on the alimentary and nervous systems are, on the whole, capital, some other portions are not quite so successful. The first chapters are taken up with the physiology and method of examination of children, and with the diseases of the newly-born. Then follows a chapter on infant feeding, which is perhaps a little too short. Still it is very clear, and, after all, it is somewhat of a relief at the present time to find a book in which this subject is not over-loaded with details, which have, in a large measure, yet to stand the test of clinical experience.

As has been already said, the chapters on the infectious diseases are excellent, particularly those on measles, German

measles, influenza, glandular fever, and diphtheria; in connection with the last of which the nervous symptoms are carefully described. Tuberculosis is fully and interestingly dealt with. Dr Williams is evidently a strong believer in the great frequency of infection from the ingestion of tuberculous milk; but infection from the tonsils and mouth and from the middle ear are also referred to in detail, and an excellent description of tuberculosis of the tracheo-bronchial glands is given. The chapter on congenital syphilis is admirable, and the alterations in the skeleton in rickets are fully dealt with, but the associated symptoms of that disease receive, perhaps, too cursory a notice. The author favours the view so strongly urged by many French pediatrists, that rickets and tetany are the result of auto-intoxication following on abnormal fermentation in the gastro-intestinal canal.

We are surprised to find that in the chapters on rheumatism and allied conditions no mention is made of Dr Still's interesting work in connection with rheumatoid arthritis. Pericarditis and endocarditis are treated of in some detail, but surely there must be some clerical error when we find it stated that "The diagnosis of congenital heart-disease is usually easy, owing to the co-existence of cyanosis and cardiac murmur. *However loud the murmur there is no thrill.*" (The italics are ours.) In dealing with diseases of the respiratory system, the author rightly gives much attention to the pleuro-pneumonia of children, but chronic non-tubercular broncho-pneumonia, from its diagnostic and prognostic importance, might have been treated of more fully. The chapters on the diseases of the alimentary system are well worthy of perusal, and especially the sections on stomatitis, intestinal obstruction, and constipation. The form of constipation depending on abnormal length of the large intestine receives particular notice. The diseases of the nervous system occupy a considerable portion of the book, and an admirable representation of this part of the subject is given, the chapters being clear and thoroughly up-to-date. Most of the illustrations are good. Its convenient size, as well as its general excellence, will, we are sure, make the book a popular one.

Pathological Technique: A Practical Manual for the Pathological Laboratory. By FRANK BURR MALLORY, A.M., M.D., Assistant Professor of Pathology, Harvard University Medical School, Assistant Pathologist to the Boston City Hospital; and JAMES HOMER WRIGHT, A.M., M.D., Director of the Laboratory of the Massachusetts General Hospital. 8vo, pp. 397, with 105 illustrations. London: The Rebman Publishing Co., Ltd. Price 14s.

SEVERAL books are before the profession claiming to teach pathological technique, but this book by two of our American confrères will take no second place. For lucidity, directness, and practical utility it will be prized by the aspirant to skill in pathological methods of examination. The plan of the book is practical: it begins with a not too detailed description of how a *post-mortem* examination ought to be made. The authors in their preface truly say that "every autopsy presents for solution a problem which may be simple or complex," and that "the solution of the problem often requires the highest skill in *post-mortem*, bacteriological, and histological technique, but in its solution lies the fascination of pathological work." They advise the routine bacteriological and histological examination of the more important organs in all suitable cases. This advice we very fully endorse, and wish that all our large hospitals had a pathological staff large enough and sufficiently trained to make this possible. We doubt if any field is as suitable as a large hospital for the conduct of examinations and investigations which would add immensely to our knowledge of diseased processes. Unfortunately our hospitals cannot spend the money necessary for such a department, but some of our rich men might specially endow such departments in Edinburgh, Glasgow, Aberdeen, and Dundee. From the foregoing it will be gathered that the aim of this book is to be a help in the carrying out of such investigations, and for such we heartily commend it. Apparatus and methods are shortly and clearly described, and there are chapters on bacteriological diagnosis and clinical bacteriology, while the last part deals with histological methods. The book does not profess to be exhaustive, as no book of the kind could be, but it contains all that the authors have found of most practical value.

A Manual of Clinical Diagnosis, by Means of Microscopic and Chemical Methods. By CHARLES E. SIMON, M.D., late Assistant Resident Physician, Johns Hopkins Hospital, Baltimore. Second edition, revised and enlarged. 8vo. pp. xx. 563, with 14 coloured plates and 133 illustrations. London: Henry Kimpton. 1898. Price 16s. net.

IN this admirable manual Dr Simon confines himself to an account of the means of diagnosis afforded by microscopical and chemical methods; physical diagnosis, in the conventional sense of the term, is entirely excluded from the scope of the book. Agreeing in general arrangement with the well-known text-book of v. Jaksch, Dr Simon's manual is somewhat more exhaustive than that work, and that it has filled a gap in English medical literature is shown by the fact that a second edition has been called for within little more than a year from the publication of the first. The author proceeds with his subject in a systematic fashion, considering first the physiology and then the pathology of the secretion or excretion in question, and dealing with its microscopical, chemical, and bacteriological examination in order of importance. The chapters dealing with the gastric secretion and the fæces are extremely full, and are remarkable for the precision with which the various methods are described. The chemistry of digestion—both normal and abnormal—is gone into in some detail, and a plate is given of the Boas-Oppler bacillus, which is said to be constantly present in the stomach contents in cases of carcinoma, and to be almost as constantly absent in other conditions. A more complete description of the fæces in early life, particularly in cases of infantile diarrhœa, would have been a valuable addition to the section. The pages devoted to intestinal parasites are complete and good. After chapters on the nasal secretion and the sputum, the examination of the urine is taken up, and naturally claims a large share of the book. The subject of albumosuria is shortly and clearly treated, and the significance and relation of so-called "peptonuria" explained. According to Dr Simon, "a nucleo-albuminuria recognisable by the available tests, does not exist under normal circumstances." In this chapter we note that a somewhat greater diagnostic importance is ascribed to the diazo-reaction than that generally held by English physicians. Following the section on the urine we have chapters on

transudates and exudates, on cystic contents, and on the cerebrospinal fluid. The last-mentioned contains a useful summary of the information likely to be obtained by lumbar puncture. The book concludes with chapters on the semen, vaginal discharges, and mammary secretion.

The first chapter in the book—that on the blood—seems to us the least satisfactory. In considering the subject of hæmoglobin estimation no mention is made of Oliver's Tintometer, undoubtedly the most accurate instrument for the purpose. The variety of poikilocytosis characterised by irregularity in the shape of the central dell, the rounded outline of the corpuscle being the while preserved, is not described. The leucocytes are classified under eight heads: lymphocytes, large mononuclear, polymorphnuclear neutrophiles, transitional forms, eosinophiles, basophiles, myelocytes, and non-granular polymorphnuclear. The obvious fault in this method is one of cross-classification, and we think that it is certainly more logical, and (for beginners at least) very much simpler, to classify leucocytes separately according to their nuclei and according to their granulations. An ingenious method of fixing films at a temperature of 120° C. without the use of special apparatus is described on page 67. In the description of the granulations, the old term neutrophile is retained without reference being made to the fact that the granulation is really a fine acidophile one. The expression "mast-zellen" is usually restricted to those cells bearing the γ granulations of Ehrlich and does not include the δ granules. We should be sorry to appear hypercritical in pointing out these inaccuracies; several others occur, in most cases, no doubt, trifling, but the subject of hæmatology is already sufficiently confusing to the student, and the rest of the book is so excellent and authoritative, that we cannot but wish that this section were as good as the rest—as the parasitology and bacteriology of the blood, for example.

The book is well printed, the illustrations are good and in most cases original, there is a full index and a very complete table of contents.

Outlines of Practical Surgery. By WALTER G. SPENCER, M.B., M.S., F.R.C.S., Surgeon to the Westminster Hospital. Demy 8vo, pp. x. 694. With 109 illustrations. London: Baillière, Tindall & Cox. 1898. Price 12s. 6d. net.

THIS book is what it professes to be, a description in outline of surgery in its more practical aspects. It is not a cram book, it is something better than that; neither is it a text-book, it is too sketchy for that—it is difficult to classify. Although we do not quite recognise the class of readers to whom it will appeal, taking it as we find it, the book lives up to its title, and furnishes on the whole as satisfactory an outline of such a wide subject as could reasonably be expected within the space occupied.

In the preface the writer states that "details of pathology and bacteriology are best dealt with in special works," a remark which he also applies to ophthalmic surgery. But for details in any subject in surgery we fear the reader will have to refer to some other work than that before us.

The fact is that practical surgery is not susceptible to the "outline" method of treatment. In this work, for example, we find various operations and appliances described with perfect accuracy and clearness—so long as the reader is already acquainted with the facts—but to a beginner the descriptions are so brief and sketchy as to convey little or no useful information. We defy anyone to drain a suprapubic cystotomy by a Sprengel's syphon apparatus, or to insert a Murphy's button, from the directions given in the paragraphs descriptive of these procedures; nor do we think an amputation at the hip would be satisfactory if the operator did no more than follow the description here given. Further, it results in a want of proportion between the importance of a subject and the space devoted to it. For example, we find such comparatively trivial affections as "chilblains" and "outstanding ears" occupy about the same amount of space as conditions like malignant diseases of lymphatic glands, cancrum oris, palmar hæmorrhage or hydronephrosis.

These remarks apply to the limits the author has set himself, not to the manner in which he has accomplished his difficult task. Most of the descriptions are excellent so far as they go, and we only regret that they do not go further.

On the whole the information is well up to date, but it does seem rather late in the century to devote even five lines to "maggots in wounds."

The illustrations in the work, like the text, are in outline, and some of them are particularly instructive, indeed many of them go far to eke out the meagreness of the text.

A Text-book of Diseases of Women. By CHARLES B. PENROSE, M.D., Ph.D., Professor of Gynecology in the University of Pennsylvania; Surgeon to the Gynæcean Hospital, Philadelphia. Second edition. London: The Rebman Publishing Co. (Ltd.). 1898. Pp. 529. Price 20s.

THE call for a new edition in less than a year justifies the author in making merely typographical changes and in believing that his book has been approved. The book is well printed and abundantly illustrated, but its special feature, and probably a main factor in its popularity, is the plan on which the subject of treatment is dealt with. The author, as a rule, lays down a definite line and saves the trouble which the student and the inexperienced practitioner have in weighing the competing schemes of therapy. It is, however, doubtful if those who are dependent on such instruction are, except for examination purposes, entitled to detailed descriptions of the major gynecological operations. The subjects of the general causes of the diseases of women, gonorrhœa in women, the menopause, and the effects of the removal of the uterine appendages are rightly deemed worthy of separate chapters, and show the completeness of the scheme of gynecology which the author lays so clearly before his readers.

Polyneuritis in relation to Gestation and the Puerperium. By H. G. TURNEY, M.A., M.D., Oxon., etc. (From Vol. xxv. of St Thomas's Hospital Reports.) London: J. & A. Churchill. 1898. Pp. 47. Price 1s.

IN this paper we have a careful summary of the somewhat limited literature as well as good reports of three localised cases hitherto unrecorded. In discussing the etiology of the condition the author goes more fully into the doctrine of auto-intoxication than was perhaps necessary, though the analogy of neuritis, due to more definite poisonings, lends it more immediate points of contact here than in many of the other puerperal conditions it is now supposed to explain.

Drs Harvey and Davidson's Syllabus of Materia Medica. By WILLIAM MARTINDALE, F.L.S., F.C.S., joint author of "The Extra Pharmacopœia." Tenth edition. Pp. 64. London: H. K. Lewis. Price 1s. net.

THIS is a useful little syllabus originally intended for the students at University College, London, and more useful to students than to practitioners.

It is arranged under Inorganic, Organic, and Vegetable Kingdom. In the last division the arrangement adhered to is the botanical one of orders, which makes it more suitable for the student than the practitioner.

It is revised in accordance with the "British Pharmacopœia," 1898.

Abstracts from Recent Literature

MEDICINE

DANGER OF DIAGNOSING CHRONIC SYPHILITIC FEVER AS TUBERCULOSIS.—Dr Janeway of New York, in the *American Journal of the Medical Sciences* for September 1898, records several cases which had been diagnosed by prominent and experienced physicians as cases of tuberculosis, but which cleared up completely under anti-syphilitic treatment, and in which there was found on careful investigation a history of syphilitic infection. These cases included such conditions as consolidation of the lung, chronic synovitis, friction heard over the liver from the presence of hepatitis, &c., but in most instances the diagnosis of tubercle had been chiefly based on the gradual failure of health, with emaciation, constant rise of temperature and often profuse perspirations. The author lays stress on the fact that a rise of temperature of long duration may occur in the tertiary stage of syphilis, along with malaise, emaciation, &c., without of necessity presenting such local manifestations as can be made out in an ordinary examination of the patient. In all such obscure cases it is well to try the effect of the antisyphilitic treatment.

HÆMORRHAGIC PANCREATITIS: A CASE HAVING UNUSUAL MEDICO-LEGAL RELATIONS.—It is well known that this disease may give rise to sudden death, and in this connection a paper by Dr Hitchcock, on the medico-legal relations of this affection, affords interesting material (*Medical Age*, February 10th, 1898).

The disease is comparatively uncommon, has a rapid development, and almost invariably a fatal termination. The patient may have appeared in perfect health until the attack manifests itself, when death may follow within half an hour. The predis-

posing causes may be previous attacks of gastro-duodenitis, abuse of alcohol, and possibly injury. The first symptom to be complained of is epigastric pain, which soon becomes excruciating. Then follows vomiting, collapse, shock; and death most frequently ensues within two or three days. The diagnosis is seldom made during life, it being usually mistaken for an acute perforation of the intestine. Appendicitis, irritant poisoning and acute intestinal obstruction must all be excluded.

The case related by the author was that of a night yard-master on the railway, a man aged forty. Immediately after assisting to turn an engine on a turn-table, he complained of severe abdominal pain. The severity of this rapidly increased, and on the second day the man died. The *post-mortem* examination showed the presence of areas of fat necrosis in the pancreas. These are said to be due to the action of the pancreatic secretion on the surrounding fatty tissue; but, apart from injury, it is difficult to understand how the pancreatic secretion could find means of escape from the ducts. The pancreas was thrice its normal size, greatly infiltrated with fat, and hæmorrhagic throughout its whole extent. There was a large hæmorrhage behind the peritoneum towards the head of the pancreas, and extending on each side as far as the kidneys. The effusion differed, however, from that which would be produced by the rupture of a vessel from injury.

DISINFECTION BY FORMALDEHYDE VAPOUR.—Dr G. W. Fairbanks relates a very interesting set of experiments in regard to the disinfecting power of formaldehyde vapour (*Centralblatt für Baktereologie*, Nos. 1-3, 1898). Pieces of cloth were saturated with pure cultures of diphtheria, typhoid, anthrax and other bacteria. These were hung up in different places in an ordinary room; some exposed, others between mattresses, and others wrapped up in several folds of cloth. The vapour of formaldehyde was generated by burning one pastille for every cubic metre of air space. The various openings in the room were first closed, and after vapourising the formaldehyde, the room was left unopened for thirty hours. At the end of this period a careful bacteriological examination was made of the various saturated cloths. It was found that, in every case where the formaldehyde vapour had free access to the cultures, the organisms were killed. Not only so, but those wrapped up in several folds of linen were also destroyed, excepting anthrax bacilli. The vapour did not destroy the organisms in large fragments of diphtheritic membrane. This method of disinfection proved absolutely effectual for the ordinary germs of disease, and is specially useful in that the dust of the room is rendered absolutely sterile.

Professor Grawitz strongly relies on this method, com-

bined with the usual modes of disinfection by steam, for bed-clothes, mattresses, pillows; washing floors with solution of corrosive sublimate, etc. The vapour of formaldehyde does not harm the colour of carpets, curtains, or other decorations, and no odour is left after the procedure is carried out.

UNILATERAL LOSS OF THE PUPILLARY LIGHT REFLEX (REFLEX IRIDOPLEGIA).—Leszynsky (*New York Med. J.*, July 30th and August 6th, 1898) reports two cases of the above condition, and as a consequence of a careful survey of the recorded cases feels warranted in drawing the following conclusions:—

1. That unilateral reflex iridoplegia is a condition which may arise in tabes or paretic dementia, being confined to one side for an indefinite time before the other pupil becomes similarly affected.

2. That it is also found in cerebral syphilis, and may be permanently limited to one eye.

3. That it often occurs as a remote result of disease of the third nerve or its nucleus, and may be the only demonstrable clinical evidence of a pre-existing third-nerve paralysis.

4. That it is always indicative of central-nerve degeneration involving either the oculo-motor nucleus or its efferent branches.

5. That it is generally of syphilitic origin.

6. That the lesion producing unilateral reflex iridoplegia is situated in the centrifugal portion of the reflex mechanism. The correctness of this view is confirmed (*a*) by its occurrence in association with, or as a sequence of, oculo-motor paralysis; (*b*) by Siemerling's case, in which the sphincter nucleus and the motor oculi nerve were found degenerated; (*c*) by the *post-mortem* evidence of the non-involvement of Meynert's fibres in cases where bilateral reflex iridoplegia was present.

RAPID METHOD OF RIDDING THE THROAT OF DIPHTHERIA BACILLI AFTER DISAPPEARANCE OF THE FALSE MEMBRANE.—Hand, in the *Phil. Med. Journal* of August 27th, reports his method of treating the throat after the membrane disappears.

When left untreated diphtheria bacilli may be found in the throat weeks after disappearance of the membrane, causing the patient to be subjected to a tedious quarantine. Hand has found, however, that if the throat be painted once daily with a solution of silver nitrate in water, in the proportion 60 grains to the ounce, the bacilli disappear, cultures becoming negative, after two or, at the most, three applications. He believes the application of this solution *before* the membrane has disappeared to do more harm than good.

ARTISTIC BREATHING.—Hudson Makuen, in the *Phil. Med. Journal* of September 3rd, has a paper on the various modes of breathing, a thesis presented to the American Laryngological Association at its twentieth annual meeting in May last. After discussing the three forms, clavicular, costal, and abdominal, with their combinations, he states his belief that the best form of breathing is the costal, because, first, it enables the singer or speaker to take in the greatest amount of breath; and, second, the uplifting of the ribs puts the thorax in the best possible position for the expiratory control that follows the act of vocalisation, the uplifting muscles then giving way to the downpulling muscles, principally the diaphragm, the abdominal muscles and the intercostals. He concludes by emphasising the following points:—(1) That the diaphragm for artistic purposes is not an inspiratory muscle; (2) that it should be used only in the expiratory effort of singing and speaking; (3) that the abdominal method of inhalation, so-called, is not only insufficient but harmful, and it should not be encouraged.

NEUROLOGY

HUNTINGTON'S CHOREA.—Dr Joseph Collins records, in the *American Journal of the Medical Sciences* for September 1898, the results of his careful examination of the brain of a patient suffering from this disease. The hereditary tendency to the disease was well shewn in this case, where nine members of the family in three generations were victims of the malady. The naked eye changes in the nervous system were:—(1) Thinness and atrophy of the cortex, evidenced by the diminution of weight, by the shallowness and breadth of the fissures, by the narrowness of the gyri and by the thinness of the cortical mantle. (2) A mottled or streaked appearance and a cribriform state of the brain on cross section in the fresh state. This streaked and cribriform appearance was found to be due to a diminution in number and size of the ganglion cells, to an increase in size of the perivascular and pericellular spaces and to increased potency of the blood-vessels. The changes shewn by microscopical examination were:—(1) A slowly progressive degeneration of the ganglion cells of the brain cortex, involving principally the layers of the large pyramids and polymorphous cells, particularly evident in the Rolandic area, much less so in the frontal region, and incomparably less so in the posterior part of the brain. (2) Increase of neuroglia, most marked where there is greatest cell implication, but nowhere sufficient to constitute sclerosis. This increase is most evident about blood-vessels and ganglion cells. (3) Enlargement of the perivascular and

pericellular spaces. (4) Slightly diseased blood-vessels, the principal change being a proliferation of the nuclei of the tunica externa and a thickening of the tunica interna. No punctate hæmorrhages were seen. (5) Slight degeneration of the crossed pyramidal tracts of the spinal cord. Collins therefore considers that the lesion is a chronic parenchymatous degeneration of the cortex, principally of the Rolandic cortex, with consecutive and secondary changes in the interstices and vascular system. These results correspond closely with those observed by Dana in an early case of this disease. As regards pathogenesis, the writer says: "To express the nativity of Huntington's chorea more colloquially, it may be said that the ganglion cell whose function it is to subserve motion and give basis to intellectuality is genetically lacking in the power which will enable it to exist as long under the same environment as the ordinary ganglion cell." Dr Collins has some plain words for those who pretend to be able to cure or benefit the condition by tenotomy of the eye muscles.

SUBARACHNOID SEROUS EXUDATION PRODUCTIVE OF PRESSURE SYMPTOMS AFTER HEAD INJURIES.—Dr Walton records in the *American Journal of the Medical Sciences* for September 1898 some interesting cases which he thinks were probably due to localised subarachnoid serous exudations. In these cases after an injury to the head, general symptoms of compression with localising paralytic symptoms appeared as they would in a case of meningeal hæmorrhage. But whereas in meningeal hæmorrhage the unconsciousness steadily deepens and the other symptoms show steady and continuous progress, in subarachnoid serous exudation the symptoms run an atypical course. In hæmorrhage, after unconsciousness is once established, the insensibility to pain is generally profound, whilst in serous exudation pressure over the affected area gives rise to signs of discomfort, long after the unconsciousness has been so profound that no response to questions can be elicited. In hæmorrhage inequality of the pupils is likely; in the case of serous exudation the pupils have been equal, though reacting sluggishly to light. In conclusion Dr Walton formulates the following conclusions:—

1. A severe blow on the head may result, either directly or by *contre coup*, in a local bruising, congestion and swelling of the brain-tissue, with serous exudation into the subarachnoid space, either with or without œdema of the brain substance.

2. If this accumulation of fluid occurs over the motor centres it may be imprisoned so as to cause focal pressure symptoms, simulating meningeal hæmorrhage.

3. This accumulation of fluid is not compensatory, but

represents an ineffectual effort toward relief of tension, as shown by the swollen condition of the underlying brain tissue when exposed by operation.

4. The lesion is self-limiting, the resulting paralysis disappearing in the course of a few days.

5. This condition may be mistaken for middle meningeal or middle cerebral hæmorrhage. The diagnosis is difficult and sometimes impossible. Factors aiding in the diagnosis are (*a*) an atypical course, (*b*) absence of steadily increasing coma, and (*c*) the appearance of sensitiveness to pain on manipulation of the head even after the unconsciousness is so great that questions are not answered. The general symptoms (restlessness, stupor, headache, and moderate febrile movement) may be the same in both conditions.

6. The mere presence of paralysis following a blow upon the head is not necessarily an indication for immediate operation, and in the absence of steadily deepening unconsciousness and of steady progression of other cerebral symptoms, it will be often wise to postpone surgical interference, though generally speaking an exploratory operation is always justified in case of focal paralysis following head injury.

7. This lesion is to be particularly borne in mind in the case of children and young adults, and perhaps in alcoholic patients. In elderly patients the same set of symptoms point more decidedly towards hæmorrhage.

[It must be confessed that the author has not yet produced any satisfactory evidence in favour of such paralytic symptoms of short duration being due to subarachnoid exudation. Two of his cases recovered, whilst in the third there was found *post-mortem* several lesions in various parts of the brain. He seems to rely largely on the fact that in several of such cases, where trephining has been performed, the dura was found bulging markedly, and on dividing it a considerable quantity of fluid escaped. This might of course be due to other causes. The theories of the functions of the cerebo-spinal fluid put forward are also not beyond exception.]

EARLY SPINAL SYPHILIS WITH BROWN-SÉQUARD'S PARALYSIS.—Jacobs (*New York Med. J.*, Aug. 27th, 1898) describes and discusses very fully the following interesting example of the above condition. A man, aged forty, came complaining of twitching of the toes of the right foot at night and loss of power in walking. He has always been quite well except that a year ago he contracted syphilis, which had been very meagrely treated. There had been noted at first a diminution of sexual power, and later its abolition. To the above twitching there had been added lameness and indefinite pains in the legs and

back. There had been no absolute loss of control of the sphincters, although for a few days he had to go quickly when the desire to urinate came. There were sensations of numbness in the left leg. Sensation was normal everywhere except over the left side from the umbilical level downwards over the left leg, on all which pain and temperature sensations were absent while touch was scarcely affected. . The gait was spastic, hemiplegic, and unsteady on the right side, this being chiefly due to the weakness of the flexors of the thigh, leg and foot. There was slight impairment of the muscular sense in the right leg. The deep reflexes were exaggerated on both sides, but much more in the right leg, while the superficial were greater on the left side. There was inco-ordination of muscular action in the left leg as shown by the play of the tendons at the ankle. The case represented an incomplete picture of Brown-Séquard's paralysis. The partial type is the commoner in spinal syphilis and has been considered by some as of diagnostic importance. Under anti-syphilitic treatment there was a certain improvement for two or three months but thereafter during the last four years there has been no further progress. The early appearance of syphilitic affections of the nervous system is not so rare as Naunyn and more especially Fournier (*La Gazette médicale de Paris*, Dec. 9th, 1893) have shown. According to the latter about two out of every hundred cases of syphilis manifest nervous disease within one year of the infection. Spinal syphilis is much rarer than cerebral. As to the nature of this lesion which Erb has elevated into a disease entity with definite clinical characteristics there is still much to be learned. Lamy (*Thesis*, Paris, 1893) and Gilbert and Lion (*Gazette médicale de Paris*, May 6th, 1893) have thrown most light on the subject. All practically agree that the pathological process is mainly one of meningo-myelitis, the myelitis being secondary to vascular changes. The above case with its syphilitic history, its symptoms scattered but slight, and its therapeutic reaction, points to its specific origin. Its late history, with the permanence of some symptoms, explains and confirms a supposed sclerotic change in the cord. The absence of bladder involvement prevents its being included under Erb's clinical type. The hemiplegic paralysis with weakness of the flexors of one limb is in keeping with Mann's study of cases of Brown-Séquard's paralysis (*Deutsch. Zeitsch. f. Neuerheilk.*, 1896, Bd. x.), but the retention of the extensor groups in an unilateral cord lesion would require the assumption of a double-sided innervation for the lengtheners in order to harmonise the clinical and pathological facts. In explanation of the sensory conditions in an unilateral lesion, Mann is led to reject the idea of strictly separate paths for the conduction of various kinds of sensations. While pain and

temperature sensations may be conducted in a definite region of the cord, touch sensation, which is an element in all sensory impression, is conducted in *all* the centripetal paths of the corresponding half of the cord. While this plausible theory would explain why touch is retained when through interruption of the spinal cord any degree of sensory conduction is left, it is not in accord with accurate physiological investigations, which point to the independence of the various sensory qualities both in the cord and in the peripheral nerves.

SURGERY

TUBERCULOSIS OF THE BREAST.—In reporting a case of this somewhat rare condition, Charles L. Scudder (*American Journal of the Medical Sciences*, July 1898) takes the opportunity of presenting an analysis of all the cases of tuberculosis of the breast recorded in medical literature. Including his own, the cases number eighty in all, but for one reason or another twenty-three of these are rejected as lacking positive anatomical and bacterial evidence of their tubercular nature. Of the remaining fifty-seven cases, four were distinctly secondary to disease of rib, sternum or axillary glands. No case has been accepted as genuinely tubercular unless a microscopic and bacteriological examination confirmed the clinical evidence. It is but fair to state, however, that a considerable proportion of the rejected cases present as conclusive evidence of their claims as a clinical picture can be expected to furnish. A strong family history of tubercle, a typical clinical history, or the co-existence of other undoubtedly tubercular lesions, stamp the majority of these as being due to the tubercle bacillus. A few certainly are more than doubtful.

Methods of infection.—The breast may become the seat of tuberculosis in one of three ways: (1) *by primary infection*, the bacillus entering through the milk channels or through an abrasion of the nipple or skin. This the author thinks must be extremely rare. If through the ducts the glandular acini are first involved; if through a wound, the interstitial tissue is the primary focus; (2) by *metastasis* via the blood stream, from a tubercular lesion elsewhere in the body; or (3) by *secondary infection*, by direct contiguity of tissue, *e.g.*, from disease of the ribs, sternum, lymphatic glands, or pleura.

Hereditary influences.—While not admitting the hereditary nature of tuberculosis, the writer believes that a predisposition to infection by the disease is inherited, and a considerable number of the recorded cases of breast tubercle support this view. Due weight is to be given to a family history of tubercle in the diagnosis of doubtful swellings in the mamma.

Age.—Mammary tuberculosis occurs in comparatively young adults, *i.e.*, during the period of functional activity of the gland.

The majority were between twenty and thirty-five years of age. Some were younger; the oldest was fifty-three.

Sex.—Four of the accepted cases occurred in males, and two of those rejected.

Additional tubercular foci were found in many cases in such varied situations as the lymphatic glands of the neck, the bones of the elbow joint, the ribs and sternum, the apices of the lungs, the epididymis, the sacro-iliac synchondrosis, the pleura and peritoneum.

Previous condition of the breast. — About half the breasts attacked have been at one time functionally active, but in only a few was lactation going on during the development of the disease. In ten cases a previous inflammation had been present. The author thinks that this pre-existing mastitis predisposes the patient to mammary tuberculosis by furnishing a soil of diminished power of resistance.

Subjective evidences of the disease. — *Pain* is the symptom which is most prominent; in many cases it is severe, and out of proportion to the degree of inflammation present. The *onset* is slow and insidious, and the disease is well established ere it is recognised. The *breast itself* is the seat of much round-celled infiltration in the early stages, giving it an indurated brawny feel. In the later stages it is often small. Seldom is the nipple retracted. The *local lesion* varies from a single, firm, small node, to a hard, irregular, ill-defined mass. The masses may be movable or fixed in the gland substance, or to the pectoral fascia, but seldom involve the skin at first. They not infrequently pass beyond the limits of the breast proper towards or even into the axilla. As the disease progresses the swelling becomes less and less defined and incorporates neighbouring tissues, having a doughy feeling on palpation. Later softening takes place, fluctuation is detected, the skin gives way, and sinuses, from which puriform caseous material escapes, are formed. Most of the sinuses appear first near the nipple, possibly because pyogenic organisms entered there and determined the softening and pus formation.

Progress of the disease.—The disease always runs a very long course, varying from a few months up to five years, as in the author's own case. Secondary cases progress more rapidly than primary ones.

Fistulæ were present in more than half the cases, the openings appearing as ulcers of the characteristic tubercular type.

The *axillary lymphatics* are involved in nearly all cases, in some apparently being the primary lesion.

Tubercle bacilli were found in twenty-nine cases, either in the pus, the axillary glands, or the mammary tissue; and experimental inoculation was successful in nine cases. In a few cases miliary tubercles have been visible to the naked eye. In all

microscopic evidence was forthcoming. In addition to the tubercular nodules with giant cells, there is marked round-celled infiltration, with cirrhotic changes in the breast tissue, and endarteritis of the vessels.

Diagnosis.—This disease has to be distinguished from the ordinary pyogenic infections by its clinical history and course; from carcinoma by the age, history and physical signs; from syphilis by the history and effects of treatment by antisyphilitic remedies; from actinomycosis by the microscopic examination; and from cysts by the softness and ill-defined character of tubercular swellings. Positive evidence of tubercle will be obtained by the microscope, culture, and inoculation.

The *prognosis* depends upon whether the disease is primary in the breast or secondary to other lesions.

Treatment.—Complete removal of all disease, including the whole breast and all the glandular contents of the axilla, is the only treatment advisable. Although less radical measures have been tried, experience proves that they are dangerous and liable to be followed by recurrence of the disease.

OPHTHALMOLOGY

A CRITICISM UPON MULES' OPERATION (by Dr Bourgeois, Reims, *La Clinique Ophtalmologique*, May 25th, 1898).—After mentioning the well-known difficulties and dangers of Mules' operation (insertion of glass ball into scleral cavity), Bourgeois suggests that it be replaced by an enucleation followed by the insertion of some non-irritating substance into the wound, the muscles over the whole area being drawn together in front of the inserted object. He suggests a small ball formed of silk over a nucleus of cat-gut or peat, and to aid in securing the muscles after enucleation, he recommends that they be transfixed with cat-gut sutures and secured before being excised from the eyeball.

SOME REMARKS UPON THE TECHNIQUE OF ENUCLEATION (by Dr Meyer, Paris, *Annals of Ophthalmology*, July 1898).—In order to increase the mobility of the stump, particularly in a lateral direction, after enucleation, Meyer gives the following rules: Preserve as far as possible the adhesions between the muscles and the conjunctiva. To do this the conjunctival membrane is to be dissected loose as clean as possible, and separated from the underlying sclerotic by dissecting down between the recti muscles. The muscles are then drawn well away from the globe, and the capsule of tenon separated close to it in order to preserve the attachments of the muscles to the capsules. The external and internal recti act much better if their ends are not drawn too closely together, consequently the only sutures employed should be interrupted ones that are

introduced vertically. As the conjunctiva is cut so close to the margin of the cornea, it is well to make two horizontal incisions in the conjunctival membrane parallel to the edge of the muscles.

LESIONS OF THE OPTIC NERVE IN HEREDITARY SYPHILIS (by Dr Sauvinea, *Annals of Ophthal.*, July 1898).—The author doubts the statement that the lesion usually spoken of as *congenital pigmentary retinitis* is due to hereditary syphilis. He holds that although it is often seen in association with the general disease, yet it is just as frequently found in patients who are free from any such taint. On the other hand, he mentions a lesion of the optic nerve, which he considers as one of the stigmata of the general affection. The lesion is always binocular. The papilla is more or less discoloured, appearing whitish gray, or gray in colour. The cribriform fascia is never visible. The disc is flattened, or but slightly swollen. The edges are indistinct, and at times are invisible throughout the entire circumference of the disc. The retinal veins are distended, and the arteries are slender, and in places covered by an exudate which generally extends along the edge of the disc, or even passes over to the surface of the disc. At times the origin of the retinal vessels is hidden. These lesions may or may not be accompanied with a pigmented condition of the retina.

BINOCULAR OPTIC NEURITIS AND PIGMENTARY CHORIO-RETINITIS FOLLOWING PERNICIOUS FEVER OF HOT COUNTRIES (by Dr Antonelli, Paris, *Annals of Ophth.*, July 1898).—Antonelli reports a case similar to many other examples of the above-named ocular affections following pernicious malaria. Vision in each eye had fallen to counting fingers at 2 metres. The optic discs were white at the centre, bordered by a ring of gray, with a white ring beyond. The retinal vessels were contracted and could not be seen just after leaving the disc. In isolated areas the retina presented a stippled appearance, this in some instances being due to ordinary pigmentation, and in others to a typical "bone corpuscle" form of pigmentation. There was no history of syphilis, but there was a clear history of the disease following a malarial attack while the patient was in government service.

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THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

DIABETES MELLITUS

being the substance of two lectures delivered in November 1898

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IN considering the subject of diabetes mellitus, the main symptom of which is the presence of grape sugar in the urine, we may note at the outset that in normal urine a trace of this glucose may be present; but while this is so, it has to be carefully remembered that the quantity present in conditions of health is exceedingly small—so minute, indeed, that it can only be detected by elaborate chemical methods dealing with large quantities of urine at a time. Such chemical processes are quite outside ordinary clinical work, and therefore the first point I wish to make is that so far as all ordinary clinical investigation is concerned, the urine of normal persons is free from glucose.

The presence of glucose or grape sugar in the urine in quantities sufficient to be appreciable by means of clinical tests is not, however, an infallible indication of the presence of diabetes, because you may meet with grape sugar in tolerable abundance, under certain conditions, in the urine of persons who show very small aberrations from the standard of health. There is, for example, a certain considerable number of persons who, when they consume much sugar, have a consequent glycosuria. This condition, which is known as dietetic or alimentary glycosuria, is totally different in its method of

origin from diabetes mellitus. These persons, if much sugar be taken in any form—taken for example in Germany in the form of what is there called "Exportbier"—will pass a urine which for several hours after the meal readily gives the sugar reaction.

In this country one sees the condition occasionally in persons who are under medical examination for life insurance. A prosperous financier who lives rather well, and remember there is no more dangerous circumstance in the life of a man than the sudden acquisition of riches—dangerous I mean from the point of view of self-indulgence—such a person proposing to have himself examined for insurance purposes proceeds to fortify himself by the consumption of a good lunch accompanied by a liberal supply of champagne. The result is that when his urine—passed two hours afterwards—comes to be examined he is found to be the subject of glycosuria. One naturally looks with grave suspicion upon such a life, and it is not until repeated examinations have been made that it is discovered that the condition is purely a temporary one and in no way indicative of diabetes. The manner in which this dietetic glycosuria arises is believed to be as follows:—You are aware that sugar taken into the stomach passes by means of the portal circulation to the liver to be there stored up in the form of glycogen, and in most people all the sugar so taken is dealt with in this fashion, but there are, as I have said, certain persons, otherwise healthy, in whom all the sugar ingested does not pass to the liver—possibly because the portal circulation is not capable of dealing with the whole. A portion of the sugar, therefore, absorbed by the lacteals, escapes the liver, and finding its way directly into the general circulation, is at once excreted in the urine.

Passing then from the subject of temporary dietetic glycosuria and coming now to consider the question of diabetes mellitus, I have first to tell you that there are two distinct forms of that condition. I say two forms, because it will become plain to you that two varieties of the disease at least are totally different in their origin and in their course; but I think, as time goes on, we shall probably succeed in differentiating other forms of this important disorder. The simpler division of the subject is, however, into two varieties—the one called the lighter form of diabetes or sometimes known as

hepatogenous diabetes, and the other the severe form. In connection with the lighter form of diabetes, which we must first consider, you should clearly understand that in pure instances of this affection there are few or no general symptoms, and that the diagnosis of the condition rests entirely upon the more or less steady presence of glucose in the urine. In the severer form, on the other hand, as we shall presently see, the general symptoms are very striking.

It has been said that in cases of dietetic glycosuria the ingestion of large quantities of sugar gives rise to the presence of glucose in the urine. It is necessary now to add that in those persons who show this peculiarity, the taking of starch in any quantity will not give rise to glycosuria. It is otherwise in the case of the lighter form of diabetes. In persons who are subject to this complaint, not only the ingestion of sugar but also the consumption of food containing starch is followed by the appearance of glucose in the urine. As you are aware, carbohydrates are transformed in the alimentary canal into sugar, and in this shape they pass by the portal circulation to the liver. This sugar is there turned into glycogen and stored up for the needs of the organism. If, now, any lesion exists which interferes with that function of the liver which is concerned in the change of sugar into glycogen, the lighter form of diabetes arises. The hepatic cells being no longer capable of forming the sugar absorbed from the intestine into glycogen, that sugar accumulates in the blood and makes its appearance in the urine. You must not, however, imagine that all the subjects of the lighter form of diabetes are affected in this way to an equal extent. In some of them the glycogenic function is but little disturbed, the sugar appearing in the urine chiefly after a meal, and in comparatively small quantity—the patient retaining the power of transforming a considerable proportion of the sugar and starchy food into glycogen. In others, the function appears to be entirely in abeyance, the least quantity of sugar or the least quantity of starchy food failing to be transformed into glycogen and appearing in the urine as glucose. The causes of this disturbance of the hepatic function are probably very various; occasionally we see it associated with disorders of the liver. Not uncommonly it is a symptom of gout. It often occurs in very corpulent persons, and occasionally traumatic and other nervous lesions by vaso-motor or

trophic influences affect the liver so as to produce this lighter form of diabetes.

In this form of diabetes, then, you will remember that so long as the condition remains pure there are no well-marked symptoms beyond the presence of sugar in the urine, but it not uncommonly happens that after a period of time the conditions change and the case gradually passes into the severer form.

In the severe form of diabetes things are very different. Here you are dealing with a disease in which glucose appears in the urine, often in enormous quantities, not only when sugar is taken in the food, not only when starchy foods are eaten, but even in the absence of these. You may place such a patient upon an exclusively meat diet, you may exclude all forms of sugar, all forms of starch, and yet he will pass sugar in the urine. Although the glycogenic function of the liver may be affected, yet this is not all—there is some other source from which the sugar is derived. Without entering into too much detail it may be said that in all probability the source of that sugar is the striped muscle throughout the body. You are aware that the material by the oxidation of which the muscle obtains its energy, is that form of glycogen stored in the muscle cells which is known as muscle-glycogen, and you also know that when that energy is required the glycogen so stored is converted into sugar, which sugar is burnt up to supply the needs of the muscles. That is what takes place under the normal conditions, but in those persons who are the subjects of the severe form of diabetes, the power of burning up the sugar so formed in the muscle is largely held in abeyance, and the result is that when the muscle glycogen is transformed into sugar the whole of that sugar is not oxidised, and the remainder, passing into the circulation, appears in the urine. The great muscular wasting and the feebleness which are present in diabetes are no doubt due in great measure to this cause. By what lesion this change in the functions of the striped muscle throughout the body is brought about is exceedingly obscure. We know indeed that like the lighter form it is often produced by lesions in the central nervous system, and we assume that these lesions affect the nervous centres which regulate metabolism in the muscles. But while this is so it is a curious and very interesting fact that in a certain number of cases of this variety of diabetes, though not by any means in

all, a destructive lesion of the pancreas is found after death, and there is no doubt whatever that pancreatic disease may give rise to the severe form of diabetes. It has been found that in the dog, when the pancreas is removed, not merely does glycosuria follow the operation, but the animal shows also certain other of the prominent symptoms of severe diabetes, such as great thirst, polyuria, rapid emaciation, and great loss of strength. A similar result has recently been found to follow the removal of the pancreas in the frog. That these symptoms are due to the loss of some internal secretion formed by the pancreas and poured out by it into the blood, is apparent from the fact that careful ligature of the pancreatic duct in the dog does not have any such effect.

You will ask me how I can reconcile such a statement with the theory I have given you as to the change being really a metabolic one in the striped muscles of the body, and I can only reply by saying that there are other instances in which the lack of some internal glandular ferment produces serious nerve lesions. There is, for example, the case of myxœdema, where the lack of the internal secretion of the thyroid gland gives rise to nervous changes of the most profound kind, going often the length of insanity. And in these cases of pancreatic disease we may assume that some internal secretion of the pancreas, no longer produced when that organ is destroyed, is necessary to the integrity of certain nerve centres. And if we assume that the lighter form of diabetes is frequently one involving the vaso-motor and trophic centres which control the glycogenic functions, and that the cause of the severe form of diabetes is a lesion of those centres which control metabolic activity in the muscles, we shall understand without much difficulty how the one condition may merge into the other, and how a patient who has suffered for years from the lighter form may ultimately pass into the severe form with its fatal issue.

In regard to the etiology of the complaint, it has first to be noted that diabetes sometimes shows slight indications of being hereditary, that it is more common in men than in women, and that while the lighter form occurs chiefly between the ages of forty and sixty the severe form may, and usually does, manifest itself considerably earlier in life. Patients suffering from diabetes

frequently show indications of nervous diathesis, and sometimes are the subjects of actual disease of the central nervous system. It has been already observed that gout is a frequent cause of the lighter form of diabetes, which indeed is a disease of those who live too well, and that the severe form is not uncommonly brought about by lesion of the pancreas. Of the exciting causes, mention may be made of railway accidents and of blows or falls on the head or back. I recall at least one well-marked instance of this which occurred in the case of a friend of my own. I was a witness of the fall from horseback which started the complaint, and I was an observer of the various stages through which the patient passed, on his way to the fatal issue two years later.

The morbid anatomy of diabetes does not lend itself to any very precise statement. In those cases which result from disease of the pancreas, that gland may be found to be affected in various ways, and probably any disease which produces destruction of that organ may give rise to diabetes. In connection with the nervous system, tumours of the medulla or pressing thereon may be found to be the cause of diabetes, as in a case recorded by Rokitansky ; or hæmorrhage may be found there. Intracranial tumours in other situations may also give rise to this disease. Various spinal lesions may be found after death in cases of diabetes, and a form of polyneuritis is not uncommon in such cases. Sometimes minute oil globules may be found in the blood, as was first pointed out by the late Professor Sanders, and its specific gravity is sometimes increased, though this is by no means always the case. The blood usually contains grape sugar in increased amount, and its alkalinity is apt to be diminished for reasons which will be subsequently discussed. During the earlier stages of diabetes the blood may be found to contain a number of red corpuscles greater than normal and to be unusually rich in hæmoglobin. These conditions are ascribed by my friend, Alexander James, to an attempt of Nature to compensate for the great loss of oxidizable material involved in the excretion of large quantities of sugar. The tissues of the lung are often affected with tubercle, and pneumonia and pulmonary gangrene are not uncommon. Degenerative changes of various kinds are met with in the liver, kidneys, and, in fact, throughout the organs generally.

Clinically, the main symptoms of diabetes mellitus are the following :—Thirst, inordinate hunger, emaciation and weakness, polyuria, and the presence of glucose in the urine.

If we consider the symptoms in detail, we may note in the first instance the patient's general appearance. A man suffering from the severe form of diabetes—at any rate when the disease is well advanced—exhibits an emaciation which is seldom equalled in any other complaint. Towards the end of the case the adipose tissues may have almost completely disappeared, the muscles are wasted, and the bones stand out with a striking prominence. The patient, even in the earlier stages of the complaint, looks older than his years ; his expression is nervous, anxious and distressed ; the skin of the face presents a curious brick-red colour which extends from the cheeks over the temples to the roots of the hair. If there be, as there frequently is, some degree of cyanosis, the tint will be of a dusky red. Over the body generally the skin is dry and harsh, there is often much itching—probably the result of irritation of the sensory nerve endings in the skin produced by the circulation of a blood laden with impurities. Indeed, the itching is sometimes of great severity, and the scratching of the skin by the patient's nails leaves deep excoriations, showing a more than usual degree of vulnerability of the tissues. The occurrence of boils and carbuncles is not uncommon in diabetes, indeed, one should be very careful to test the urine of any patient suffering from boils, because it sometimes happens that these are the first indications of the presence of diabetes.

In connection with the alimentary system the most striking phenomenon is that of excessive thirst : the patient drinks enormous quantities of water and yet remains thirsty, and this thirst increases and diminishes in proportion to any increase or diminution of sugar in the urine which may take place. Large quantities of water are leaving the system and consequently the tissues are very dry. The tongue is apt to stick to the gums and palate and patients sometimes make a peculiar smacking noise in separating the tongue from the mucous membrane of the palate in articulation. The appetite of diabetic patients is usually considerable, indeed they often eat enormously and yet complain that they are not satisfied. And, with this, the power of digestion is often strikingly good.

It not uncommonly happens that a man who, previous to the onset of diabetes, was dyspeptic and required to be very careful in regard to diet, after the diabetic symptoms develop can and does eat with impunity food which he previously could not have digested. There is, however, usually some degree of constipation—probably in large measure due to the great quantity of meat which the patient consumes. For the reason which has already been given, the general muscular strength of these patients is very low—weakness is indeed one of the earliest indications of the onset of diabetes, and in the later stages it may be so great that the patient cannot stand. The cardiac muscle also suffers in a similar fashion, the apex beat becoming weak, the heart dilated, the pulse feeble.

Passing now to the consideration of the urine, you may note that its increase in quantity is one of the first symptoms of diabetes: the polyuria may indeed be very excessive—the patient sometimes passing quantities which are occasionally as great as 30 pints in twenty-four hours. In colour, it is usually of a light yellow or greenish tint, and when freshly passed it is clear. In cases of the milder form of the complaint, however, the polyuria is much less marked, sometimes indeed not present at all—and the urine is of a darker tint—a good prognostic indication. The specific gravity of diabetic urine is high, usually ranging between 1030 and 1040, although sometimes it may considerably surpass the latter figure. In reaction it is acid, in odour it is usually sweet, and it contains glucose. The quantity of this grape sugar which is present varies very much in different cases, from a mere trace up to quantities of 30 oz. or more, in twenty-four hours. It is most abundant two or three hours after a meal, more is passed during the day than during the night, and, as you have already gathered, it is largely influenced by the diet of the patient,—the eating of starch or the consumption of sugar at once increasing the quantity of glucose in the urine. Very rarely, cases are encountered in which the carbohydrate present is not glucose but a left-rotating sugar—levulose.

Now I need not trouble you with the details of the chemical operations necessary for the detection and for the estimation of glucose in the urine. These you are already familiar with, and I shall only note that in every case of diabetes an estimation of the quantity of sugar present should be made and

recorded at regular intervals, longer or shorter, according to the severity of the case, so that you may be in possession of a means of estimating the progress of your patient and the results of your dieting and of your treatment generally.

The quantity of urea present is usually considerably above the normal. This is probably in part due to increased tissue waste, but in great measure it results from the large amount of nitrogenous food upon which the diabetic is obliged to live. You may also in many cases detect the presence of albumen, the result of a degree of chronic parenchymatous nephritis which often complicates diabetes. The presence of acetone and certain of its allies may frequently be detected in the urine, and to the significance of this I shall allude presently.

One of the most frequent complications of diabetes is phthisis pulmonalis—you will very often find apical disease on one or both sides ; the bacilli of tubercle are present and the occurrence of phthisis may probably be regarded as due to that weakening of the resisting powers of the tissue to which diabetes gives rise. For the same reason the occurrence of acute pneumonia or of gangrene of the lung is not uncommon.

As diabetes is essentially a nervous disease you will not be surprised to find that many nervous symptoms are apt to develop themselves during its course. The patients are nervous and irritable, and severe headache, migraine, attacks of giddiness, epileptic attacks, neuralgia, and particularly sciatica may be encountered. Peripheral neuritis is occasionally met with, giving rise to absence of knee-jerks and other symptoms suggestive of locomotor ataxia. The sense of sight is often interfered with either by the formation of cataract or from amblyopia apart from visible organic change, resembling in this respect the amblyopia of tobacco poisoning. Hæmorrhages into the retina or actual retinal detachment may also be met with.

One of the most interesting and important of the phenomena which are met with in the course of diabetes is that known as diabetic coma. It is a frequent method of termination of diabetes, and, although it is many years since Küssmaul described the condition, even yet its causation is obscure. In some persons it is ushered in with vomiting, delirium, dyspnœa, rapid shallow breathing, cyanosis, weakening of the action of

the heart, coma and death. In other cases it commences with headache and the patients gradually pass into coma.

The onset of diabetic coma is usually ushered in by an acceleration of the rate of the pulse and of the respiration, and it is sometimes possible to foresee the onset of the coma in this way. I remember a remarkable instance which illustrates this point which occurred some years ago. I happened to be attending a gentleman, the subject of severe diabetes, who, at the time I speak of, was very near his end. He was greatly emaciated and so weak that he could only walk with difficulty. He had strong political views and it chanced that just then an important parliamentary election was about to take place in Edinburgh. He had a vote and he was very desirous of recording it. He told me that he wished to go out for that purpose, and I did my best to dissuade him from making the attempt. Knowing how strong his feelings were on the point, I went to see him early on the morning of the election day. He then announced to me his fixed intention of driving to the polling booth to record his vote. Noticing that his pulse-rate had increased, and that his breathing was accelerated and a little shallow, I told him that he must not think of leaving the house nor even of rising from bed. He was however obstinately intent on going out to fulfil what he conceived to be an urgent duty, and after spending some time in fruitless persuasion I told him at last that if he did go I believed he would not be alive that night. He informed me that that was a matter of no consequence, and that the important thing was that his candidate should be successful. He went to the polling booth, he recorded his vote, he returned home, he passed into diabetic coma, and that night he died,—a martyr to mistaken duty.

Probably some of these cases of diabetic coma may be of uræmic origin, but the condition is usually regarded as being connected, more or less directly, with the presence of acetone and certain allied substances in the blood. Many years ago it was observed that the urine in cases of diabetic coma possessed a peculiar sweet odour, and when this urine was analysed it was found to contain a substance known as acetone. It was at first believed that the phenomena connected with coma were due to poisoning with this substance, but it was subsequently discovered that acetone is not in itself a poison. Further investigation then showed that not only acetone but di-acetic acid

and also oxybutyric acid were present. These three substances result from the breaking down of the albuminous tissues of the body, and in cases of this description their amount goes hand in hand with the nitrogenous elimination and not with the sugar excretion. Without going into unnecessary detail I may say that oxybutyric acid is readily oxidised in the body into di-acetic acid, which in its turn breaks up into acetone and carbonic acid. It is most usually held that it is to the presence of these acids in the blood that the phenomena of diabetic coma are due. It is known that as their quantity increases the blood gradually loses its alkalinity and becomes first neutral and ultimately acid in reaction, and as the symptoms presented by diabetic coma resemble closely those of acid poisoning it is believed, although the matter is by no means certain, that the condition arises in this fashion. This view is confirmed by the fact that rectal injections of a solution of bicarbonate of sodium produce marked though temporary improvement in these cases.

Passing now from the symptoms connected with the urinary system, we may note, with regard to the reproductive organs, that there is usually a marked diminution or total loss of the sexual power in the man. This symptom may arise very early in the course of the disease. In women, although conception may take place, there is a great tendency to abortion. To the pruritus which sometimes affects the vulvæ in women I have already referred.

Prognosis.—The first point in regard to prognosis of which you have to assure yourselves is the source of the sugar; that is, the form of diabetes which is present. Does the sugar disappear from the urine when sugar and carbohydrates are excluded from the diet, or does it not do so? In the mild form the prognosis is very much better than in the severe. It depends to a considerable extent upon the amount of carbohydrates which the liver is still capable of dealing with and storing up in the form of glycogen. Those who can stand a little starchy food without the appearance of sugar in the urine are more likely to live long than those in whom sugar appears whenever carbohydrates are taken in the diet. Then the age of the patient is a very important point—the younger the patient, the worse is the prognosis. In a young person the mild form has a considerable tendency to pass into the severe; in older patients

the prospects are brighter. As a rule, the better the nutrition of the patient, the better the chance of his longevity. In the fat and in the gouty the prognosis is, as a rule, fairly favourable, and lastly, in speaking of the milder form, and this remark applies perhaps even more to the severe form, the more closely the patient adheres to the rules which you lay down the better is the prospect of longevity for him. The careless man with little self-restraint is likely to damage his prospects by repeated indiscretions of diet. In the severe form of diabetes the prognosis is very grave ; few, if any, recover, but with regard to the rapidity with which the fatal isssue is likely to arrive, the following points may be noted :—First, in regard to the age of the patient—the younger he is the more rapidly will the disease pursue its course. The larger the amount of sugar in the urine when the patient is on a purely diabetic diet, the more severe will be the symptoms, and the more rapid the course. The more marked the emaciation and muscular weakness the worse the prognosis, and any failure of digestive power (which, as has been already stated, is usually remarkably good during this disease) points to a rapid issue.

(To be continued.)

ABSTRACT OF CLINICAL LECTURES ON GALL-STONES [1]

Winter Session, 1897-98

By RUTHERFORD MORISON, M.B., F.R.C.S.,
Surgeon to the Infirmary

WE have recently had several gall-stone cases sent to our wards for operation. Few diseases are of so much practical importance, and it is chiefly concerning the diagnosis and localisation of gall-stones that I am going to lecture to-day.

If you look up the subject in your text-books, you will find that the classical symptoms of gall-stones are :—

1. Pain, of a severe character and sudden onset, referred to the hepatic region ;
2. Shivering and vomiting accompanying the pain ; and
3. Jaundice, following some hours after the attack.

[1] Delivered at the Royal Infirmary, Newcastle-on-Tyne.

You will also find it said that the gall-bladder is occasionally so much distended as to form a palpable tumour, and sometimes so contracted as to be tucked away under and hidden by the liver. Now all of this is strictly true and helpful so far as it goes, and I advise that you should remember this formula, as in the majority of instances where a diagnosis is possible, your diagnosis of gall-stone based upon it will be correct. But surgery or medicine learned in this way loses all interest, much is missed that is useful to the patient, and more that is instructive to ourselves. There are reasons for everything that happens waiting to be found out, although we do not recognise them they are there to be discovered, and hypotheses surely serve to stimulate further and more accurate observation if properly used; hence my observations of to-day.

Pathologists tell us that gall-stones are very commonly found in the gall-bladder after death (in 25 per cent. of all bodies over sixty) in persons who have shown no symptoms during life. Our notes of gall-stone cases tell so frequently of a previous history of "spasms" that it is impossible to avoid believing these suggestive attacks to be the result of gall-stone irritation; if so, every practitioner of experience will easily be brought to admit that gall-stones are not uncommon. Allowing for this possible source of fallacy in the pathological estimate, we are still obliged to admit that gall-stones may lie in the gall-bladder and cause no symptoms.

Here is a stone, a urinary one of large size (mulberry calculus, size of a bantam's egg shown), removed *post-mortem* from the bladder of a sensitive, hypochondriacal man, who, during his life, made no special complaint of urinary trouble. If the absence of pain in this case can be explained, it may help us to an understanding of a similar result in the gall-bladder. Let me at once say that this is not the only time I shall direct your attention to a comparison between the behaviour of the urinary and gall-bladder. For several centuries the urinary bladder has been closely studied, and something is now known of its conduct under a variety of circumstances.

It is only within the last ten years that the gall-bladder has been considered worthy of surgical notice, so that our knowledge of it has not had time to develop fully. In watching and studying it I have derived great aid from my knowledge of the

urinary bladder and its behaviour, and mean to suggest for your consideration that many things that are true of the one hold good for the other.

To revert now to our stone case. Is there any explanation of the fact that this large, rough bladder stone caused no serious urinary symptoms? Look at the surface of the stone! You will note that it is a pure mulberry; the spicules stand out prominently. There is no white deposit in the depressions between the elevations as there is in this specimen (shown). If the stone had caused cystitis, every crevice on it would have been marked by a white deposit of phosphates (as in the second specimen). The patient has not had cystitis.

We know that a gall-stone may be present in the gall-bladder or the bile ducts without causing pain, that the gall-bladder may be distended without pain, and that distension of the gall-bladder, gall-stones, and cholecystitis—all three together —exist in every gall-stone case with serious symptoms. It seems probable that cholecystitis must be present before gall-stones cause the typical symptoms and serious trouble. A desire to expel its contents then takes possession of the gall-bladder, and a stone or stones may be driven into its narrow neck, where, if the stone be of large size, it is arrested, and may completely block the outlet.

The case of a man recently in the Victoria Ward will illustrate this point.

A stout man, fifty years of age, had been troubled for the last five years with severe attacks of "spasms." An indigestible meal or efforts at work would bring them on. Thirteen months ago he had an unusually severe seizure, and shortly afterwards discovered an aching "lump" under his right ribs. Since the bad attack he had had no more "spasms," but had got thinner, and had a more or less uncomfortable aching in the side, increased by stooping and exercise. The operation showed a gall-bladder distended to the size of a large cocoanut by a clear fluid. A gall-stone the size of a filbert was firmly impacted in the cystic duct.

In this case it was clear that the gall-bladder had become distended to a large size by its own secretions, and you will doubtless have noticed the fact that after a time the severe pain characteristic of gall-stones ceased, the aching tumour being all that the patient complained of for thirteen months previous to

his admission to the Infirmary. On the same day that this patient came, a middle-aged woman was admitted with the following history:—Except for profuse menstruation, she had had no warning of anything wrong till ten days previously. Then, in reaching upwards to fix a window curtain, she felt something "drop in her inside," and cause a sensation as if she were about to faint. She lay down, and shortly afterwards felt a desire to pass water; this she was unable to do, and suffered great pain. From this time for forty-eight hours she was unable to relieve her bladder at all, and the pain came on in paroxysms, causing her to make the attempt every few minutes. At the end of this time the urine began to dribble away, and the severe pain passed off. Ten days from the commencement of her illness she was admitted into the Infirmary, under my care, complaining of an abdominal tumour and weakness. The tumour, a cystic one, and reaching to the umbilicus, ached, and was tender when pressed, but she had no severe pain. We found a retroflected fibroid uterus jammed in her pelvis. The tumour was the urinary-bladder, enormously distended with urine.

When the urinary-bladder has been continuously over-distended for some hours it loses its contractile power, and the violent pains characteristic of the early period of retention disappear. Does it not seem probable that, like the urinary-bladder, the gall-bladder will dilate painlessly when all its efforts to remove an obstruction are futile?

The diagnosis of gall-stone in such a case is based upon:—

1. The history, possibly a clear and characteristic one, of previous gall-stone attacks, but more likely one of "spasms."

2. The presence of a tumour, recognised to be the distended gall-bladder.

I need not say that the latter is immeasurably the more important, for the diagnosis of gall-stones depends upon a recognition of the gall-bladder tumour as such. It seems to have been mistaken for every other possible, and almost impossible, tumour in the abdomen; but I will not waste your time by going into the differential diagnosis between it and everything else. As a matter of practical knowledge, to mistake a moveable right kidney for a distended gall-bladder is the most common error.

The chief diagnostic points are :—

Moveable Kidney.	*Tumour of Gall-Bladder.*
Most often found in thin women before forty.	Most often found in fat women after forty.
Health not seriously impaired.	Loss of flesh and strength.
Nervous subjects.	

Palpation.

Swelling not easily felt with one hand on the anterior abdominal wall, and patient breathing quietly.	Tumour felt close to the anterior abdominal wall, and moves with respiration.
Pressure on swelling produces sensation characteristically disagreeable.	Tender when pressed upon.
Slips back into kidney region easily and completely, and remains there when patient is recumbent, unless disturbed by bodily or respiratory movements.	Has to be coaxed into kidney region, never disappears, and will not remain there unless artificially retained.
Freely moveable in every direction.	Moored at its upper part.

Bimanual palpation (one hand in front, the other in loin).

Moveable Kidney.	*Distended Gall-Bladder.*
Swelling flattened, solid, but not hard.	Rounded ; feels very hard (because it is tensely distended with fluid).
Swelling jerked down by forced inspiration ; easily detained by hands pressed together above or below it ; apt to jerk suddenly back again when pressure relaxed.	Tumour descends steadily and aggressively on forced inspiration ; ascends vigorously on expiration against any obstacle.
Loin feels hollow when the swelling is in the abdomen.	Kidney may be felt behind, and independent of tumour.

Percussion.

Tympanitic over swelling.	Dull over tumour. Dulness continuous with that of liver.

A large stone impacted in and completely blocking the cystic duct causes precisely the same symptoms and signs as those described as attending a stone in the neck of the gall-bladder, viz., a severe attack of pain, lasting some hours, followed by a large distention tumour of the gall-bladder. A small stone arriving at the cystic duct produces at first acute distention of the gall-bladder, with severe pain, and a tumour (of the gall-bladder), not, however, of such dimensions as in the first class. At a later stage, if the stone be arrested, the gall-bladder becomes smaller and thick-walled, the possible explanation of which we shall discuss later.

If the stone passes on through the cystic into the common duct and on to the duodenum, during its progress the same symptoms are present, and the gall-bladder is in a similar distended condition. This attack differs from the other only in being followed by jaundice. Such a small stone as is sometimes found in these cases cannot mechanically block either the cystic or common ducts. What, then, is the explanation of the symptoms? I have published the case of a young lady who had a stone impacted in the vesical end of her ureter for at least two years. During this time she was subject to violent attacks of pain, due to an intermittent hydronephrosis, for the enlarged kidney was easily palpable whilst the attacks lasted and became normal as they passed off. Her kidney, subsequently removed by nephrectomy, was found to be largely dilated. Though the stone was permanently there, the obstruction was only temporary, though recurring. Is the obstruction of the ureter in the one case, and of the bile duct in the other, due to spasm of either one or the other, which relaxes after a time and recurs at intervals? I think it is so.

If a large stone gets into the common duct, and is arrested there, the block lasts for a longer time. The distended gall-bladder can be distinctly felt, and there is marked jaundice. In a few days the jaundice diminishes, and may almost or quite disappear. Then after an indefinite interval another similar attack follows, then another and another. With each return of pain comes shivering and vomiting, and on the following day an increase of the jaundice. If it be possible to watch the behaviour of the gall-bladder during this time, it will be noticed that as the attacks increase in frequency the size of the

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strictures. The urinary-bladder contracts and becomes thick-walled from hypertrophy behind a partial obstruction, and so does the gall-bladder, as we have already seen. The fact that the gall-bladder cannot be felt in common duct gall-stone cases of some duration must be carefully borne in mind, for it has an important bearing upon diagnosis and treatment. Obstructions of the common duct by malignant growth are not uncommon, and when such disease has commenced in the head of the pancreas, recurring pains closely simulating attacks of gall-stone colic, along with marked jaundice, make a diagnosis very difficult. The chief points to remember are :—

The History.

In gall-stone case—pain first, jaundice second.	In malignant pancreas—jaundice first, pain second.
In gall-stone—jaundice intermittent.	In pancreatic disease — jaundice steadily progressive, and deeper than in gall-stone case.
Patients with gall-stone may have a long history and be in fair condition.	With pancreatic disease he emaciates rapidly and dies soon.
Last, but not least, in a gall-stone case the gall-bladder is contracted and cannot be felt.	In pancreatic disease the gall-bladder can be felt as a distinct tumour, often of large size.

Again, exactly the same thing occurs in the urinary bladder as in the gall-bladder. In those cases of prostatic disease in which the block is permanent and complete, the bladder is thin-walled and dilated; in others, where the block is only partial, the bladder becomes thick-walled and contracted.

I have already drawn your attention to one set of cases in which the characteristic pains of gall-stone are absent, viz., those in which the neck of the gall-bladder, or the cystic duct itself, is completely and permanently obstructed by a large stone, and in which the diagnosis of gall-stone has to be based upon the previous history and on the presence of a distended gall-bladder causing a marked tumour. The importance of recognising such cases cannot be exaggerated, for they urgently demand operative interference.

In another class, equally important, to which attention was first drawn by Osler, the characteristic pain of gall-stones may also be absent. The following is a typical example:—

A stout woman, fifty-eight years of age, a cook by occupation, who was recently discharged from the Northumberland Ward, gave the following history:—For twenty years or more she had suffered from frequent attacks of "spasms." Eight months before her admission, after an unusually severe one, she became jaundiced. The jaundice never completely passed off, but on several occasions nearly disappeared. Every two weeks, with fair regularity, she had a severe shivering attack, and vomited. The day after such a seizure she was markedly jaundiced. Since the last severe painful attack of eight months previously she had no return of her spasms, nor any pain worth mentioning. Excepting for the history, and the presence of jaundice, and an enlargement of the liver, there was nothing to guide us in fixing an opinion as to the cause of her illness. Those of you who saw the patient with me will, however, remember that I made a diagnosis of gall-stone in the common duct with much confidence, absence of pain being the only exceptional feature in the case. This I explained by suggesting that we should find a gall-bladder so contracted by its previous efforts (over twenty years of extraordinary work) that it had become functionless. At the operation we found a single large stone in the common duct, which was much dilated. The gall-bladder was so thick and so firm that I could not satisfy myself of the absence of a stone without opening it. There was only a drop or two of mucus in the cavity, which was not large enough to hold any more.

I was guided to an exact diagnosis in this case by having seen similar ones operated upon, and other examples in the Pathological Theatre, and by a knowledge of what may occur in the case of the urinary bladder, of which the following is a striking example:—A man, thirty-five years of age, was sent to me to see if anything could be done for him, as he was always wet from "incontinence of urine." When four years of age he had ruptured his urethra by a fall straddle-legs on a railing. Since then he had always had serious trouble with micturition, and had suffered many things from many physicians. For some years—and, according to his history, up to a year ago—his life seemed to have been spent in micturating and attempting

to do so, but a year ago his urine began to dribble away. From that time his pain ceased, and though he was in poor health he made no complaint except of the dribbling, and thought that except for this he was better off than he had ever been before. On bimanual examination, with a finger in the rectum and a hand above the pubis, his bladder felt like a uterus. No instrument could be got through his urethra. After perineal section, the bladder was found to be so thick-walled and contracted that its cavity would scarcely hold the terminal phalanx of my index finger.

The lesson that we have learnt from this and similar cases is that a gall-bladder or urinary bladder, whose muscular wall has become functionless, ceases to cause painful symptoms; and what I would suggest to you is that the characteristic pains of gall-stone are due to violent contractions of the gall-bladder. I have had the opportunity of seeing, with my friend Dr James Drummond of South Shields, a patient who was operated upon for gall-stone eight years ago. A large stone was felt impacted in her common duct, and was left there. Her gall-bladder was sutured to her abdominal wall, the usual practice at that time, and a permanent fistula resulted. She wore a tube in the gall-bladder, and practically the whole of the bile excreted escaped into a bottle which she carried about in her clothes. Her general health was good. Whenever the fistula had been allowed to close she had recurrence of her old pains, which disappeared as soon as it was reopened.

I need scarcely remind you that severe pain results from vigorous contraction of unstriated muscle. The intestinal pains, vulgarly called "gripes," are a pathological example of this; labour pains may be quoted as a physiological one.

The diagnosis may, after every care has been taken, require to be settled by exploratory incision, and in many cases this has been found not to be so easy as it would appear. More than once I have seen the abdomen opened in gall-stone cases and closed again with a devout expression of hope that serious adhesions might have been the cause of all the symptoms, and that the operation might cure the condition. I wish that I could satisfy myself that the dragging of adhesions in the abdomen could cause the important symptoms attributed to them by many surgeons, for to feel that an operation has done *any* good, is sometimes a not-to-be-despised consolation to the surgeon,

and a satisfaction to the friends of the patient. Operative experience and frequent attendance in the *post-mortem* room have, however, both failed to convince me that serious symptoms arising from adhesions of the abdominal and pelvic viscera are other than rare. The discovery of adhesions around the gall-bladder is, nevertheless, of immense importance to the surgeon, for next to the actual discovery of the stone or stones, it is the most certain sign that the diagnosis of gall-stones is a correct one. Stimulated by this knowledge, the surgeon will explore the gall-bladder and ducts, even though the adhesions be dense and strong, and the operation tedious and difficult, as it too frequently is. The usual explanation given of the presence of adhesions is that inflammation spreads through the coats of the gall-bladder and causes a localised peritonitis in its neighbourhood. This explanation I accept for ordinary cases, in which adhesions are not extensive or strong, but it appears to me insufficient to account for the more serious conditions.

In this connection please listen to the notes of the case of a woman, at present in the side ward upstairs, who was operated on nearly three weeks ago, and see what her history suggests, and what the result of operation confirms. For almost eight years she had suffered, at intervals of a few months, from attacks like gall-stone colic, sometimes lasting for several hours, and very severe. The day following an attack she felt weakened, but otherwise had no trouble. Six weeks before her admission to the Infirmary she had an unusually severe attack, which commenced at bedtime and continued till dinner time next day. She then got relief from pain, but for some hours was very faint and ill, and "inflammation" came on, which confined her to her bed for six weeks, during most of which time her life was despaired of. She had not recovered on her admission. The operation showed that the gall-bladder, omentum, stomach, transverse colon, and under surface of the liver were glued together by dense, strong adhesions, which were separated with difficulty. Further examination disclosed the fact that there was a hole in the under surface of the gall-bladder as large as a split pea, which from its appearance was evidently due to a perforating ulcer of the gall-bladder. There were stones in the gall-bladder and ducts.

In more than one case, in separating dense adhesions, I have found gall-stones entangled in them, sometimes surrounded

with pus, at others lying encapsuled and dry; and careful examination of the gall-bladder has failed to demonstrate the site of rupture. It is therefore impossible in many cases to demonstrate a rupture, hence the want of recognition of this cause of adhesions. It appears to me probable that the rupture is usually preceded by ulceration, as rupture of the urinary bladder, caused by retention, is. But this is not the only method of its production. I have published the notes of a case on which I operated for gall-stones, and found the gall-bladder of a curious hour-glass shape. Careful scrutiny and slitting-up of that gall-bladder showed that its peculiar shape was not due to ulceration, followed by cicatrisation, about the middle, as it usually is, but was due to a thin sacculus protruding from its fundus. The sacculus was larger than the gall-bladder itself, and so thin-walled and brittle that it was obvious that no great pressure from inside would have been required to rupture it. This sacculus in every respect resembled the similar condition met with in the urinary bladder.

Again, the rupture may be due to gangrene of the bladder, from acute inflammation with tension.

At the beginning of the session Dr Drummond asked me to operate on a lady who was urgently ill. A week previously he had seen her, and found a large tense gall-bladder, which he concluded was due to a stone blocking the cystic duct, and urged immediate operation, though she did not at the time appear to be seriously ill. He heard nothing of her for a week, when he was sent for hurriedly, and found her very ill, with all the symptoms and signs of peritonitis and the gall bladder tumour gone. On opening her abdomen, between two and three pints of purulent fluid escaped, and floating in it a number of gall stones. The gall bladder was entirely open, its fundus had sloughed off, and a large stone was felt either in the neck of the gall bladder or the cystic duct, and impacted there. No effort was made to remove it, as the patient was too urgently ill to tolerate any more operative interference than incision and drainage; but, to our surprise, she recovered, except for a small mucus fistula, which will persist till the stone is got rid of.

Some of you will remember a patient coming a few days ago to show herself six months after an operation, as I explained

to those present, for removal of her gall bladder and cystic duct. Her case illustrates the pathology of the last one, and possibly another method of gall bladder rupture. She had been subject to "spasms," and had noticed a tumour in her right side for between two and three years. All the medical men she had consulted told her it was a movable kidney, and she had worn a belt. Except for an aching in the tumour, she had no definite symptoms, and was able to do her work till five weeks ago. Then she had a shivering and increased aching in the tumour, and had since been ill and mostly confined to bed. At the operation we found her gall bladder much distended, and on the surface a thin bulging area. On opening the gall bladder more than twelve ounces of purulent fluid escaped. There was a stone impacted in the cystic duct. On removal the gall bladder wall was found to be so thin at the bulging spot that it could not have resisted the increased tension for a much longer time.

In most cases where strong adhesions are found, a carefully taken history will tell of "inflammation," which has come on suddenly, as a perforation peritonitis would. Whenever in any abdominal case strong peritoneal adhesions are met with, a gross infection leakage from some viscus is suggested. If you regard the evidence I have endeavoured to bring before you as I do, you will think with me that rupture of the gall bladder is by no means uncommon, and that this explains the dense adhesions met with so often in gall-stone cases.

Before concluding, let me say one thing about the treatment of gall-stones. Medical means are all very well, and most necessary to palliate symptoms, but no medicine or other means short of surgical ones, that I know of, will remove the stone or stones. The bowel excreta should be carefully searched, and if stones are passing and found, this is an encouragement to wait, but even then the waiting must not be too prolonged. If no stones are found after careful search, and the attacks are repeated, it is probable that a stone is impacted, and the sooner it is removed the better. Every case with serious symptoms should be at once handed over to the surgeon. A gall-stone is a serious possession, more serious than a bladder stone, and the operation for its removal safe, as safe as that for excision of a urinary calculus.

REGURGITATION AT THE PULMONARY ARTERY[1]

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REGURGITATION at the pulmonary orifice of the heart is a rare condition, and it is on account of its rarity and the difficulties which beset the physician in establishing the diagnosis that I venture to bring two cases under the notice of the Society to-night.

The cases represent well the two factors which may result in the establishment of the lesion apart from congenital causes. Firstly, endocarditis affecting the pulmonary valve cusps; and, secondly, increased pressure within the pulmonary circuit resulting in dilatation of the pulmonary artery and consequent incompetence of the valve.

CASE I. Mary F., age twenty-five, residing at Uphall, was admitted under my care in Deaconess Hospital in October 1897 complaining of weakness and pain in the left side.

For some months the patient had felt out of sorts. Three months before admission she began to suffer from pain in the left lower costal region. The pain was of a dull character and was increased by fatigue. Up to the age of sixteen her health had been exceptionally good, but since then she had not been very strong though there had been no definite illness.

On admission the patient appeared a well-developed young woman. There were no obvious morbid appearances.

The circulatory system showed no subjective phenomena. The apex beat was in the fifth interspace in the mammary line, the cardiac pulsation was gentle and diffused. There was no thrill. Percussion gave the right border of the heart 1¾ inches to the right of the mid-sternal line, the left border ¼ inch external to the mammary line. In the mitral area a soft blowing systolic murmur was heard which was not well conducted. In the tricuspid area a similar murmur was audible and the second sound was impure. Passing up along the left border of the sternum the second sound increased in loudness and the impurity became more marked, amounting to a slight murmur accompanying the second sound. This was best heard

[1] Read at the Edinburgh Medico-Chirurgical Society.

in the second left interspace 1 inch to the left of the sternal border. At the pulmonary area a soft blowing systolic murmur was audible. On passing to the right the impurity in the second sound could be traced on to the left half of the sternum, but at the aortic area the second sound was quite pure. Pulse 96 per minute, tension low, volume fair, vessel healthy.

The hæmopoietic system showed marked enlargement of the right cervical glands. No other glands enlarged. The spleen was easily palpable and tender. Anteriorly it reached to the mammary line and passed as low as the level of the umbilicus. Above the splenic dullness reached the seventh interspace.

The red corpuscles numbered 3,080,000 per cubic millemetre. The hæmoglobin was 40 per cent. There was an increase in the polynuclear leucocytes.

The respiratory, urinary and nervous systems were normal.

During the next two months the patient had several irregular rises of temperature, with rigour and increased pain in the spleen. By the end of a month the impurity of the second sound had increased to a definite murmur audible down the left border of the sternum.

Dr Gibson saw the patient with me, and as we considered the condition to be one of subacute septic endocarditis, I punctured the spleen for bacteriological examination. The examination, however, proved negative. As, however, the temperature continued to rise at irregular intervals, and the patient was getting worse, antistreptococcic serum injections were administered. The temperature after the injections improved decidedly. By the end of January the pain and tenderness in the splenic region had disappeared, and the general condition had improved. The condition of the heart had changed. The right border was 1 $\frac{3}{4}$ inches to the right of the mid-sternal line, while the left was 1 $\frac{1}{2}$ inches outside the mammary line. In the mitral area the systolic murmur was audible as before, and there was in addition a faint diastolic murmur. Both murmurs were audible in the axilla, the diastolic increasing greatly in loudness as the stethescope passed up towards the axilla. At the angle of the scapula no systolic murmur could be heard, but the diastolic was distinct. In the tricuspid area a normal first sound was

followed by a loud diastolic murmur, which could be traced up the left side of the sternum to its point of differential maximum intensity in the second interspace 1 inch to the left side of the sternal border. The murmur was well heard upon the sternum, but was immediately lost on passing off the sternum to the right. In the aortic area both sounds were quite pure, the second being accentuated. The patient improved, and by the end of January was able to leave hospital and return home, where she remained, but was never able to do any work. In June she returned to hospital feeling worse. There was some oedema. The heart was more enlarged. The diastolic murmur had increased in intensity and duration. The urine contained albumen and tube casts. The liver was enlarged. After a time she improved slightly and returned home. There she gradually grew worse and died in September. As I was absent on the continent there was unfortunately no *post-mortem* examination.

The case is of considerable interest as it is seldom that we get an opportunity of watching the gradual development of this lesion. When first admitted the patient had signs of anæmia, with enlargement of the spleen and enlargement of the glands in the neck. Examination of the blood, however, excluded the diagnosis of splenic anæmia, Hodgkin's disease and leucocythæmia. The blood showed an increase in the polynuclear leucocytes—it was, in fact, the blood of an inflammatory condition, and this opinion was borne out by Dr Gulland, who kindly examined some films for me. Taking, then, into consideration the condition of the blood, the temperature, and the gradual increasing impurity in the second sound at the pulmonary area, there could be little doubt that the patient was suffering from subacute endocarditis of the pulmonary valve of a septic nature. Though the bacteriological examination of the blood was negative, it was thought worth while to try antistreptococcic serum. The injections were followed by decided improvement in the temperature; the rigors and irregular rises of temperature ceased, and the general condition of the patient improved.

The second case forms an excellent contrast.

CASE II.—Christina C., age eighteen, single, was seen by me at the New Town Dispensary, and was admitted to Ward XXXIII., Royal Infirmary, under the care of Dr Wyllie, in

October 1896, suffering from breathlessness, pain in the chest, and cough.

The patient had enjoyed good health till three years before she came under my care, when her legs, arms and face began to swell, and she had pains in the legs which were so severe as to prevent her from walking. She was ordered rest, and after five weeks she improved and was able to go about again. She remained in good health for two years, at the end of which time she began to suffer from shortness of breath, which was most marked on exertion, and from pain in the chest. At this time there seems to have been no swelling of the limbs. She was in hospital for three months, and when discharged was feeling much better, and continued well up to her present attack, when she complained of breathlessness and coldness of the limbs.

Her family history and surroundings were good.

The patient was a well-developed, well-nourished girl. The lips showed some cyanosis. There was no œdema. There was marked dyspnœa on exertion, great complaint of palpitation, pain over the precordium, and at times giddiness. The pulse was 92 per minute regular, of fair strength and moderate tension, the vessel wall normal. There was marked visible pulsation all over the precordium, especially marked in the left interspace internal to the mammary line, and in the second and third interspaces to the left of the sternum. The apex beat was in the fifth interspace internal to the mammary line. On auscultation at the apex there was a slight presystolic murmur, ending in a long blowing systolic murmur which was well conducted into the axilla and to the angle of the scapula. At the second left interspace, an inch to the left of the sternum, a loud double murmur was audible, the diastolic part of which was well conducted down the sternum. No murmur was audible at the aortic cartilage. The respiratory system showed signs of œdema of the lungs. The urine was diminished in amount, but there was no albumin present. The other systems were normal.

For some time after admission to hospital the patient improved, but ultimately she developed an extensive thrombosis of the vessels of the right leg. The foot became gangrenous, and she died.

On *post-mortem* examination it was found that there was

well-marked mitral stenosis. There was recent endocarditis affecting the tricuspid valve. The pulmonary valve cusps were healthy, but there was marked dilatation of the pulmonary artery, with incompetence of the valve. The pulmonary dilatation seemed to be secondary to the stenosis of the mitral orifice.

There are not many cases of pulmonary regurgitation to be found in the field of medical literature. Barié in 1891, and Gerhardt in 1892, gave detailed accounts of the literature of the subject, and since then a few additional cases have been published by Gibson, Bindeau, Kast and Rumpel, and Chaplin. The causes of pulmonary regurgitation, when not due to congenital disease, may be, as in the cases quoted, either an inflammatory affection of the valve cusps, or a secondary dilatation of the pulmonary artery from increased pressure. Of the inflammatory cases, in only about a quarter is a history of rheumatism obtainable. It is rare to meet an affection of the pulmonary valve alone; as a rule an additional lesion is present, usually aortic, and hence the differential diagnosis is greatly complicated. In the first of my cases there was an affection of the mitral valve, but the aortic cusps seemed quite healthy.

The second class of case, where the regurgitation is due to dilatation of the pulmonary artery from increased pressure, is rare, and one which has been but little recognised. Stokes has pointed out that in some instances there may be dilatation of the chambers of the heart without valvular lesion, and attended by dilatation of the pulmonary artery. Gouraud in his monograph expresses the same views as Stokes. Gibson, in a paper in the *Edinburgh Medical Journal* in 1880, advanced the view that increased pressure in the pulmonary artery might give rise to dilatation and consequent incompetence of the valve, and he has since been able to bring forward cases in support of the view. Duckworth described a case of mitral and tricuspid stenosis, where, during the course of the disease, a pulmonary diastolic murmur developed, which was ascribed to pulmonary arterial reflux from dilatation of the pulmonary artery, entailing insufficiency of the valves.

Graham Steell has advocated the view that the "murmur of high pressure in the pulmonary artery" in mitral stenosis is by no means uncommon, but his views have not so far met with general acceptance. That the condition does occur there

can, however, be no doubt, as, including my own, there are now several cases on record, verified by *post-mortem* examination, where, though the valve cusps were healthy, prolonged high pressure in the pulmonary artery had led to dilatation and insufficiency of the valves.

As an ætiological factor in the disease *age* seems to have little influence. It is true most of the recorded cases of pulmonary insufficiency are noted in young people, though Gerhardt had a patient of forty-eight suffering from the lesion. One must bear in mind, however, the gravity of the lesion. Once it is fully established, the outlook is a very serious one, hence most of the cases have been noted in young people, who may not long survive the rapidly occurring loss of compensation.

The *sex* of the patient varies. Gerhardt observed the condition most frequently in women, other observers have come to a contrary conclusion. The number of cases recorded is, however, too small to allow of any conclusion being drawn.

The *diagnosis* of pulmonary insufficiency is by no means simple. The very rarity of the condition is apt to mislead the observer, and drive him to the conclusion that the murmur is aortic in origin. In pulmonary insufficiency the diastolic murmur has its point of differential maximum intensity in the second interspace about 1 inch to the left of the sternum. It is conducted down the left border of the sternum. The murmur is rapidly lost on passing to the right of the mid-sternal line, but can be heard for a considerable distance on passing outwards and to the left from the point of differential maximum intensity. An aortic murmur loud enough to be heard out to the left axillary line must necessarily be audible at the aortic cartilage. The fact that the pulmonary diastolic murmur is not heard to the right of the sternum is probably due to the anatomical arrangement of the pulmonary artery as shown by Ewart, and the relation of the right ventricle to the chest wall. Every physician must be familiar with the fact that the pulmonary second sound is heard over a very limited area of the chest wall. Thus in the case of a reduplication of the second sound at the pulmonary area, both the pulmonary and aortic sounds are audible; but on passing to the aortic area a single sound, the aortic, is, as a rule, alone audible. In pulmonary incompetence a diastolic murmur is audible at the

second left intercostal space, if the aortic valves be competent a healthy second sound is heard at the aortic cartilage.

Some observers have remarked that the pulmonary diastolic murmur was affected by respiration, being louder during forced expiration, the increased loudness being due to increased pressure in the pulmonary artery during expiration. In neither of my cases was this phenomena noticeable, though in the first very special attention was paid to this point.

The audibility of the murmur in the back is of importance. Gerhardt advanced the view that in this lesion a double tone amounting almost to a murmur may be heard outside the border of the right scapula. In Case I. the murmur was very audible at the angle of the left scapula. I do not think, however, that any great diagnostic significance can be attached to this. I have carefully compared the diastolic pulmonary murmur with an aortic diastolic of similar intensity, and cannot find that the pulmonary is any better heard in this position or to the right of the vertebral column than an aortic diastolic murmur of a similar tone and intensity. Indeed, if we think for a moment of the anatomical arrangement of the parts, we would expect the aortic murmur to be the best heard of the two, as the aorta and left ventricle come into far more intimate relations with the dorsum than the pulmonary artery and right ventricle.

It has been stated by Friedreich that interrupted breathing is audible over the lung on deep respiration in these cases. The phenomena he considers due to the capillary pulse in the pulmonary artery. The observation and explanation are, I think, both to be received with some doubt. In neither of my cases could this be made out. The respiratory murmur was perfectly regular. When the phenomena does occur, I should think it is more likely to be due to a secondary respiratory affection, and that it has no definite diagnostic significance for the lesion under discussion.

There is nothing characteristic in the pulse of pulmonary incompetence; it is rapid, weak and possibly irregular if compensation has broken down—the pulse of organic cardiac disease with want of compensation. This point is of importance in distinguishing the lesion from aortic disease.

The points then to be dwelt upon in the diagnosis of pulmonary incompetence are the location of the point of

differential maximum intensity in the second interspace to the left of the sternum ; the conduction of the murmur down the left border of the sternum ; the area of audition of the murmur being wide downwards and to the left, very limited upwards or to the right ; the absence of any characteristic alteration in the pulse, as is found in aortic incompetence. I do not think that much stress can be laid upon the alteration of the intensity of the murmur during deep respiration, nor upon the audibility of the murmur in the back. I was inclined, before I had seen a note of Gerhardt's observation, to think that the murmur was unusually audible over the scapula, but further observation and comparison convinced me that this was not the case. I do not think that any diagnostic significance can be laid upon irregularity in the respiratory murmur.

With regard to the question of prognosis, here as in other cardiac lesions we must take into account the general condition of the patient, his surroundings, temperament and station in life, the extent of the lesion, its effect on the heart, and the nutrition of the myocardium. Apart from these factors, pulmonary incompetence must be viewed as a very serious lesion. In aortic incompetence we have the strong left ventricle with its great power of establishing compensation, with, behind it, the mitral valve and the pulmonary circulation. In pulmonary incompetence there is only the comparatively weak right ventricle, with the comparatively less efficient tricuspid valve. Even in health the tricuspid valve is at times incompetent, a fact of which anyone can convince himself by riding a bike up a very steep hill, when the muscular effort will commonly produce a tricuspid systolic thrill. There is then in pulmonary incompetence but a comparatively slight barrier between the establishment of the lesion and loss of compensation with backward pressure throughout the system. That this is so is borne out by the early age of the recorded cases, few having long survived the establishment of the lesion, and by the two cases which have come under my notice.

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A CASE ILLUSTRATING HÆMORRHAGE INTO THE VENTRICLES OF THE BRAIN—CLINICAL DETAILS, AND NECROPSY

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HAVING read with much interest the article, in the December issue of the Journal, by my friend Mr Miles, on convulsions caused by ventricular hæmorrhage, I am prompted to publish the notes of a somewhat similar case which was under my care nearly two years ago. It has been interesting to me to find that the character and other features of the convulsions, unusual in some respects as they seemed to be, were very similar to those described by Mr Miles. There are other points in the case which make it one of considerable interest. I reproduce the notes just as they were made at the time.

On February 26th, 1897, at 11 P.M., I was called to see a gentleman, previously unknown to me, who was said to be suffering from acute indigestion. I found a somewhat stout, florid man, aged thirty-five years, suffering from frequent and violent retching, and bringing up fluid of a sour character. He seemed dazed, as if by alcohol, but this was not supported by the history. He was reclining on bed, extremely restless, turning about in all directions, getting up and moving awkwardly, as if giddy. He said he felt numbness in his right hand. The pupils were equal, and reacted well to light. There was no hernia, nor anything in the abdomen of abnormal nature

to be found. He wished to take mustard and water to empty his stomach, and I allowed him to do so. He soon vomited freely a large amount of partially digested food, and sour fluid, and this brought the violent retching and straining to an end. He said he felt much easier, and looked so, though still rather dazed. I then left him reclining on his bed, to obtain a complete history of his past and recent health from his friends.

Past history.—The most significant detail was that eight years previously, while playing tennis vigorously, he fell down unconscious, and had, after that, a severe illness, the diagnosis of which was said to be rupture of a blood-vessel in the head, or some kind of "fit." He had eventually recovered completely, without physical or mental defect. Before that illness he had been perfectly healthy, but probably inclined to too free use of alcohol. Since the illness he had enjoyed excellent health, with no symptoms of any kind whatever. His tendency to take alcohol had continued, but was not admitted to be anything like harmful indulgence.

Recent health.—He had been much occupied in business matters and political affairs, and worried thereby. On the evening of Feb. 26th, the day on which I first saw him, he had taken a hearty dinner at home, and was in excellent health and spirits. He went out to see some friends, and in the house of one of them, at 8.30 P.M., he began to feel "queer and sick." He started for home in a cab, stopping to take a nip of whisky on the way. His wife came home at 10 P.M., and found him very white and sick looking, and complaining of pains in the back of the head. I enter into these details with the purpose of bringing before the readers of these notes, a clear picture of the man and his surroundings, such a conception of a case imprinting it more permanently on the memory, and thus insuring its value in future experience.

On returning to the patient's room, I found him lying on the floor. He was quite conscious, though still dazed, and slow in speech, but this, I was told, was natural to him. He sat on the edge of the bed, and passed water unassisted and readily, and then lay down in bed. Up to this point it is likely that had he fallen into the hands of the police (as suggested by the remarks of Mr Miles), he would have been considered to be partially intoxicated. I applied mustard to the nape of the neck, and to the legs, and remained

to observe the sequence of events, it being now fairly clear that the attack was cerebral in nature. He became more confused, and spoke ramblingly of long past events. By degrees in the next hour he became partially unconscious, though never deeply so, and quite speechless, and then some rigidity and loss of power was noticed in the right arm and leg, and anæsthesia of the right conjunctiva. The pupils were now decidedly contracted, equal, and reacted to light. The temperature was 102°, and the pulse 54, rather full and of fair tension. His breathing now became markedly nasal-stertorous, but was relieved by turning his head on one side. His face began to flush.

At 2 A.M. Feb. 27th, the following note was made:—"Subconscious, breathing irregular, noisy at times, deep and hurried, again slower (cerebral). Pulse noticeably slow—54. Some rigidity and loss of power in right arm and leg. Reflexes normal. Pupils small, equal, reacting (not pin-point).

"Right conjunctiva almost quite anæsthetic. Left normal. No paresis of face."

At 10 A.M. the symptoms were much the same, but every now and then he breathed rapidly and noisily, and the *left* arm and hand and fingers moved in a purposive-like manner, performing athetotic-like movements, with flexions at wrist and elbow. The *left* leg also sprawled about. There was occasional rigidity, alternating with flaccidity, in the *right* arm, which he also partially raised by taking it in his left hand. The right leg lay extended, partially paralysed. The treatment had consisted in continuance of counter-irritation and ice to the head, calomel in full doses, and oil and turpentine enemata, to freely relieve the bowels. On the morning of the 28th he seemed slightly better, was more conscious, right conjunctiva less anæsthetic, pupils slightly larger and reacting well. The temperature was normal, and continued so for twelve hours. The pulse was usually about 72, but often running up to 100-112, and then down to 84-72. But the breathing, like the pulse, was still of cerebral type, coming and going in irregular fashion, sometimes quiet, sometimes quick, noisy and deep. Urine was passed readily, free from albumen.

During the day he again had frequent "irritative attacks," in which the *left* hand sprawled about, and picked at the body, and then the breathing became quick and noisy, the eyes partially

opened, and the occipito-frontalis contracted vigorously. There was no conjugate deviation of the eyes. *These attacks were brought on by moving or examining him* (see Mr Miles's case). The temperature in the evening rose gradually to 102°. The "irritative attacks" (convulsions) became less and less frequent.

Remarks.—It was clear that there had occurred a lesion in the brain, causing at first vomiting, slight collapse, pains in the back of the head, and confusion, rapidly producing, though at the same time gradually, paresis on the right side of the body, and irritative symptoms on the left, with pressure effects, as indicated by the pulse, breathing, and paresis. What and where was the lesion? There was some resemblance to the "congestive attacks" of the general paralytic, but no reason at all to consider this as a possible explanation. But possibly it was a hæmorrhagic effusion of approximately similar nature. The areas involved were too extensive to admit of a hæmorrhage *in* the brain substance, with the presence of only partial coma, and undilated and active pupils. Neither was his age, condition of blood-vessels, heart, or kidneys, such as to make ordinary apoplexy probable. His former brain seizure, eight years before, was extremely significant, but the details to hand at the time were meagre, and not felt to be quite reliable. As subsequent events proved, it was the clue to the whole question. As he had in some respects tended to improve after forty-eight hours, a hæmorrhage into the ventricles was not taken into consideration. For this, and other obvious reasons, a hæmorrhage into the pons was also excluded. I remembered a case of extraordinarily severe purposive-like convulsions which occurred in the late Dr Brakenridge's wards when I was acting there as house-physician. The attack had come on with absolute suddenness, unconsciousness and convulsion, in a young healthy man. The convulsions were induced by examination, etc., and were not of tonic and clonic character, but sprawling, resistive, co-ordinated movements. I spent one whole night keeping him under chloroform to control these, and the next night in injecting atropine and ether to stimulate the action of the respiratory and cardiac centres, which seemed about to fail, the pulse and breathing being of the most extraordinarily irregular cerebral type. That patient recovered completely, after a long illness, in which paresis of all his limbs had occurred

and passed away, blind of one eye from atrophy after optic neuritis. In Dr Brakenridge's opinion, it was a case of "convexity meningitis," as described by Ziemssen. In the case at present under narration, it occurred to me that possibly the same condition might be present (whatever that actually was), and that possibly a similar fortunate result might ensue, but it was very soon evident that a fatal termination was approaching.

During the next day, Monday, March 1st, the temperature remained about 102°. The symptoms were much the same, although the peculiar convulsive attacks had, since Sunday afternoon, subsided. The paresis on the right side seemed greater. The knee-jerks later on in the day were both absent. Plantar reflexes were well marked, most so on the right side. Calomel and croton oil had been given by the mouth, and tartar emetic hypodermically, in doses of $\frac{1}{25}$th and $\frac{1}{16}$th grain, repeated under observation. In the evening he was rather more unconscious, the pupils more contracted, though still reacting to light. At midnight the temperature was 103°.

After this the convulsions again set in. There were from ten to twelve in an hour. They were characterised by rapid deep breathing, blowing of the cheeks, and swelling of neck, clenching of jaws, rigidity in right arm and leg, and left leg, and rigidity and twisting movements in right arm and hand. The toes were strongly flexed. The pulse became very quick. The attack lasted a minute or less, gradually passing off.

Any disturbance of the patient brought them on (*tetanic*).—With continuance of former treatment, bromide of soda and chloral were injected per rectum, and bromide of soda hypodermically. No beneficial effect was obtained. The pulse was becoming rapid and weak, also the respirations. On Tuesday, 2nd March, the temperature gradually rose, the convulsions continuing. In all these latter attacks there was never observed any conjugate deviation of the eyes. In the afternoon the temperature stood at 107°, and death occurred shortly after this observation. The whole duration of his illness was about ninety-one hours.

A *post-mortem* examination of the head was fortunately obtained, the notes of which I append :—

Membranes of brain injected and œdematous. Some flattening of convolutions of left hemisphere present. The left tempero-sphenoidal lobe was adherent by its under surface to

the apex of the middle fossa of the skull. Both lateral ventricles were occupied by blood clot. There was also effusion of blood over the superior surface of the central lobe of the cerebellum. On section a large hæmorrhage was found in the substance of the left hemisphere, in the posterior portion of the parietal lobe, and at the junction of the parietal and occipital lobes. Blood had welled out into the left lateral ventricle, filling it up, and had torn through the posterior part of the corpus callosum, destroying also part of the postero-external aspect of the corpus striatum. There was also blood clot in the fourth ventricle. When the blood was cleared away, a rounded tumour-like mass, the size of an acorn, was exposed, situated in the midst of lacerated brain tissue, to the outer side of the corpus striatum. When the tumour was cut into, it was found to have dense fibrous walls, with a central cavity, occupied by a blood-stained semi-fluid substance.

On further examination of the parts, two other similar swellings were found, lying in the adjacent brain tissue. The three were connected with each other by a thin-walled sinus-like vessel, and this vessel was traced forwards and outwards through the substance of the brain as a thin-walled venous sinus. This became continuous with the veins on the surface of the hemisphere. These aneurismal tumours had a very thick fibrous wall, and the cavities were somewhat loculated.

There was nothing abnormal in the rest of the brain, and no disease of its other blood-vessels.

It does not seem necessary to say much further on the case. The clinical details read in the light of the *post-mortem* results make it clear and instructive. The points wherein it differed from a hæmorrhage in the brain substance alone, or pressing on it from without, are sufficiently obvious. It might be asked—When did the primary bleeding in the left hemisphere burst into the ventricles? The first evidence of involvement of the right side of the brain was on the morning after the initial attack—about twelve hours thereafter. It was then that the peculiar convulsive movements (tetanic) were first observed, and they were due, I presume, to the presence of blood clot in the right ventricle. The temporary improvement which apparently occurred on that day, and on the next day, the evidence of which was a less degree of unconsciousness, a return of the temperature to normal, and diminished anæsthesis

of the right conjunctiva, was probably due to the escape of blood into the ventricles, thus relieving the pressure in the left hemisphere. This apparent temporary improvement was thus coincident with actual further increase of the damage to the brain, and the evidence of this, and of the implication of the right side of the brain, was the purposive-like spasms on the left side of the body.

The rupture into the ventricles caused therefore a temporary check, more apparent than real, in the fatal symptoms, to be followed by their steady increase, on continuance or renewal of the hæmorrhage. So far as my memory serves me, I have not heard of the peculiar convulsive attacks (purposive-like, and tetanic in their response to outside stimulus) as being symptomatic of ventricular hæmorrhage, but if not so recognised, some support is lent to this view by the above case, in conjunction with that recently reported by Mr Miles.

The cause of the hæmorrhage in this case was not suspected, as it had given rise to no previous symptoms, although the patient's history might have suggested it.

CASE OF HEART ABNORMALITY WITH MARKED CYANOSIS AND DEFICIENT DEVELOPMENT

By T. BURN MURDOCH, M.B.,
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Pathological Report

By THEODORE SHENNAN, M.D., F.R.C.S.Ed.,
Pathologist to the Hospital

J. T., æt. three and a half years, was admitted to the Royal Hospital for Sick Children on 6th November 1897, suffering from great debility accompanied by marked cyanosis. The appearance of the child was most striking. He was puny (weighing only 1 stone 7 lbs.), pigeon-breasted, rachitic, and had large bosses on the parietal bones. He also suffered from purulent discharge from the left ear. He could neither walk nor talk. He was of a dusky olive colour in the face. The lips were markedly cyanosed, as were his extremities. The fingers and toes were very distinctly clubbed and cyanosed. This condition was said to have been present more or less since birth. The child

had had no acute illness of any kind. The family history was unimportant, and two other children were healthy.

Circulatory system.—On inspection, marked pulsation was seen in the second, third, and fourth right interspaces, and in the third, fourth, and fifth left interspaces, in the suprasternal notch, in the carotids as high as the ears, and in the radial and ulnar arteries; also in the epigastrium. The apex beat was felt best in the fifth interspace. The pulse was soft and compressible. A marked thrill was felt over the precordia—particularly on the right side where the pulsation was seen. A loud systolic murmur was heard in the aortic area, also in the third and fourth right interspaces. This was conducted upwards into the vessels of the neck. The second sound in the aortic area was clanging in character. The other cardiac sounds were obscured by the murmur. The child's condition remained much the same till the 12th of November, when he became more restless and frightened, with irregular and sighing respirations. The temperature rose to 103°, and a left internal strabismus developed. On the 13th the child was collapsed and almost moribund, but the parents insisted on removing him home to the country. The child died on the 16th November.

A *post-mortem* examination of the thorax was obtained under considerable difficulties at the patient's home on the 17th, when the following cardiac condition was found:—

Description of Heart.

The general shape approximates to the normal, the modifications being due to the greater development of the right side of the heart. The apex is formed by the left ventricle.

External measurements (made soon after removal):—

Round base of ventricles—septum to septum—

Right	12 c.m.
Left	8 c.m.
From base of ventricles round apex in line of septum . . .	13·5 c.m.

Right auricle.—Dilated, walls thickened, musculi pectinati very marked, except on septum.

Foramen ovale, patent anteriorly: C.D. 0·2″ (0·5 c.m.), elongated from above downwards, and directed so that blood

To show Right Ventricle.—R.A.T. Right arterial trunk (aorta). L.A.T. Left arterial trunk. S.A. Septal aperture. Tr. Right auriculo-ventricular opening. L.A. Left auricle.

To show Left Ventricle (L.V.).—L.A.T. Left arterial trunk (pulmonary) with O. Aperture in inter-ventricular septum. A few chordæ tendineæ of the mitral valve are seen. C.S. Bristle in left cardiac vein.

would pass with ease from right to left, but very little in the opposite direction.

Venæ cavæ normal. The coronary sinus has a normally placed Eustachian valve, and across its aperture stretch two delicate vertical bands resembling chordæ tendineæ.

Right auriculo-ventricular opening, C.D. 0·85″ (2·10 c.m.).

Right ventricle.—Dilated and hypertrophied. Walls vary in thickness from 1·3 c.m. at base to 0·4 c.m. at apex. Columnæ carneæ prominent, particularly one on the right side at the junction of the anterior and posterior walls, which is continued upwards and to the left in a thick muscular bundle separating the auriculo-ventricular opening from the right arterial trunk. Musculi papillares diminutive.

Right auriculo-ventricular valve.—Flaps healthy. They form a curtain, with three indentations not passing to attached edge, dividing it into three parts. Two of these are placed right-anterior and left-posterior. The third, smaller than the others, is to the right. The larger segments, together, correspond to five-sixths of the circumference, the third to the remaining one-sixth.

The interventricular septum is thick, and at its upper part, in front of the auriculo-ventricular opening, is an aperture elongated from above downwards, measuring 1 c.m. by ·5 c.m. The lower two-thirds of this is formed by muscular septum, which is rounded towards the opening, and gives attachment anteriorly to chordæ tendineæ from both auriculo-ventricular valves. The upper third is in relation to the valvular opening of the left arterial trunk, the lower edge of the inter-auricular septum forming the posterior of the fibrous bands described later in connection with that opening.

The right arterial trunk leaves the ventricle anteriorly and slightly to the left of the auriculo-ventricular opening, being separated from it by the thick band of muscle previously alluded to. C.D. 0·6″ (1·5 c.m.). Cusps normal. They are placed right anterior, right posterior, and left. Its walls are thick, corresponding to normal aorta. It was ascertained at the *post-mortem* that this trunk curved backwards and transmitted the systemic circulation.

The coronary arteries leave it, in relation to the right posterior, and left cusps. The right coronary artery passes directly backwards for 1·2 c.m., then gives off a branch to

the right auricle, and, curving to the right, divides into two large branches, one of which ramifies on the outer wall of the ventricle, the other passes backwards to the interventricular septum. The left coronary passes in front of the left arterial trunk to the septum anteriorly.

Left auricle.—Walls thinner than the right. Musculi pectinati hardly noticeable. Pulmonary veins normal, so far as can be made out. Auriculo-ventricular opening, C.D. 0·9″ (2·25 c.m.).

Left ventricle somewhat dilated, walls vary from 0·3 c.m. to 0·2 c.m. in thickness. Columnæ carneæ numerous, though for the most part small in size, particularly on the lower and septal parts. There are three musculi papillares on the left surface, which are much better developed than those in the right ventricle.

Left auriculo-ventricular valve shows three complete segments. Two large, left anterior and right posterior, and a small one interposed to the left. The chordæ tendineæ corresponding to the septal half of the valve pass to the anterior margin of the opening in the septum and to the ventricular surface of the septum; those from the remainder to the musculi papillares.

Aorta.—Leaving the ventricle to the right anteriorly and in relation to the ventricular surface of the right posterior segment of the auriculo-ventricular valve is the left arterial trunk. C.D. 0·5″ (1·25 c.m.).

Partly occluding its opening, and in relation to the upper part of the interventricular aperture, are two thick horizontal semilunar folds of fibrous tissue arranged obliquely right and left, which have served to direct most of the blood from the left to the right ventricle through the orifice in the septum, and also some of the blood from the right ventricle into the "aorta."

The valve is placed 0·8 c.m. above the opening of the vessel, and consists of two semilunar cusps placed anterior-right and posterior-left. In the anterior sinus of Valsalva is a slight bridge of fibrous tissue which partly subdivides it. The vessel walls are thin, and there are no coronary arteries in relation to it.

Summary.—It may be stated, generally, that the aorta and pulmonary artery are transposed; the auricles are normal, and

A.

.C.A.

Tr.

M.

ABNORMAL.

A. Systemic arterial trunk.
Tr. Right auriculo-ventricular valve.
C.S. Coronary sinus.
P. Pulmonary arterial trunk.
M. Left auriculo-ventricular valve.
R.C.A., L.C.A. Right and left coronary arteries.

R.C.A.

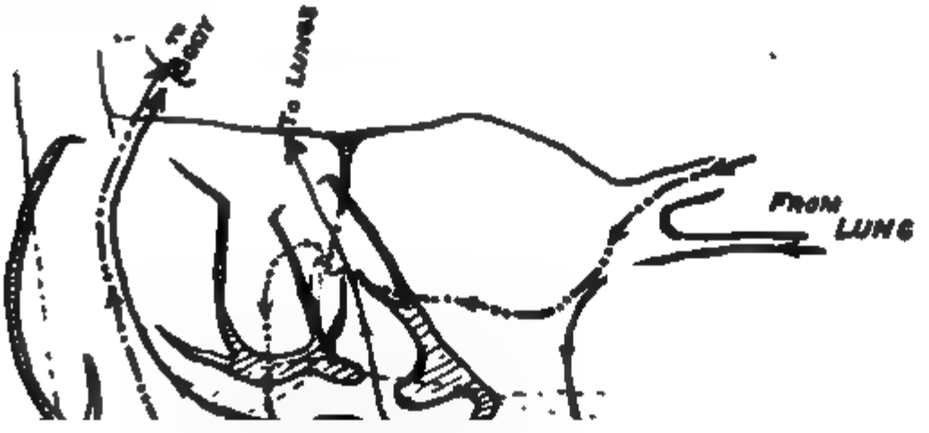
C.S.

NORMAL.

PLATE IV.

with normal connections with the systemic and pulmonary vascular systems, but arrangements are present which to a certain extent admitted of oxygenised blood passing from the left ventricle through the systemic trunk, and of systemic venous blood passing to the lungs.

Systemic venous blood would reach the lungs by way, firstly, of foramen ovale, left auricle, left ventricle, left arterial



COURSE OF PULMONARY VENOUS BLOOD.

A. Dotted line, through foramen ovale, and right auriculo-ventricular valve, to right arterial trunk.

B. Firm line, through left auriculo-ventricular valve, aperture in septum, chiefly to body, partly to lungs.

trunk; secondly, and probably to a greater extent, directly from the right ventricle through the left arterial trunk, the flow being directed by the arrangement of the valvular opening of that trunk.

Oxygenised blood would pass to a slight extent through the foramen ovale to the right side of the heart, but more by way of the left auricle, left ventricle, interventricular aperture,

to the right ventricle, whence, with the lesser quantity which would pass through the foramen ovale, it would be propelled through the left arterial (systemic) trunk. Again, the blood in none of the chambers of the heart would be purely arterial or purely venous, but venous blood would predominate in systemic circulation, accounting for the great cyanosis evident during life.

8.

COURSE OF SYSTEMIC VENOUS BLOOD.

A. Dotted line, throught right auriculo-ventricular valve, to arterial trunks.
B. Firm line—through foramen ovale.

Briefly, the lesions are: patent foramen ovale, abnormal auriculo-ventricular and "aortic" valves.

Abnormal relation of right auriculo-ventricular opening to right arterial trunk.

Aperture in interventricular septum.

Various abnormalities of right arterial trunk.

Coronary arteries coming off from right instead of left arterial trunk.

Transposition of arterial trunks.

Digest

TREATMENT OF HYPERPYREXIA IN RHEUMATISM

By H. G. LANGWILL, M.D., F.R.C.P.Ed.,
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PASSING on now to the treatment of this evidently very grave complication, we happily find ourselves upon much more certain ground. However much difference of opinion may prevail as to the *etiology* and *pathogenesis* of hyperpyrexia in rheumatism, all observers and investigators of the condition are at one in regard to its *treatment*. The question of treatment has to be considered under its two aspects—(1) as regards the *prophylaxis* of the condition and (2) the *remedies* for the complication when present, but it will be simpler if the latter of these is taken first.

The earliest record of the employment of the now almost universally adopted method, consisting in the application of cold in one of its forms, appears to be a case described by Meding in 1870 in the *Archiv. f. Heilkunde*; but in this country at least the name of Dr Wilson Fox will always be remembered as having been the first to draw the attention of the medical profession to the subject by the publication of his articles in the *Lancet* in 1870, and subsequently in book form, on the treatment of hyperpyrexia (14). In the latter he gives full details of three cases, two which occurred in 1871, both successfully treated, the third, an unsuccessful one, at an earlier date—1869. So carefully were these cases watched and treated, and so thorough are the records given of them, that an examination of them reveals the fact that but little further progress has been made in regard to the details of this method of treatment since the publication of what may be regarded now as a classical contribution to medical literature.

The methods which have been adopted in different cases vary considerably, but essentially they all have the same aim in view—rapid abstraction of heat from the body. Perhaps the most widely advocated and best method is by the use of *the cold bath* — the temperature of the water being graduated as required. The patient, who, as we have seen, is usually comatose or almost so, is lowered on a sheet into a bath containing water at a temperature about 90°, the water being then quickly reduced in temperature to about 70° or even lower. This is preferably accomplished by means of ice, which may at the same time be rubbed over the patient's body. His temperature must be continuously taken, usually in the rectum, by a rapidly recording thermometer, the one essential point to ensure success in the treatment being this, that he must be removed from the

bath before his temperature has reached normal,—indeed it is not safe to continue the cold bath after the patient's temperature has fallen to 102° or thereby. The reason of this lies in the fact that the temperature continues to fall for some little time after the patient is removed from the direct influence of the cold surrounding medium, and hence, should his removal be delayed until his temperature has been brought down to its *normal* level, the subsequent continuous fall after his removal from the bath results in dangerous collapse with persistently *subnormal* temperature. This unfortunate result was well-marked in the case of A. S. during the treatment of his *second* attack of hyperpyrexia in 1894, as recorded previously,[1] where we saw that for nearly two hours after his removal from the cold bath his temperature continued at 95°, with a pulse-rate of 44, and the patient showed such signs of collapse that hot bottles to the surface of the body with vigorous friction, brandy by the mouth and subcutaneous injections of stimulants were all required for some considerable time to enable him to survive the results of the too vigorous application of cold for the cure of the initial hyperpyrexia. So soon, then, as the patient's temperature falls to 102°, he should be removed, dried, and placed on a dry bed with only a light coverlet, his temperature being still taken regularly at a few minutes' interval so as to guard against either a fall to subnormal or a return to excessive limits as before.

The time the patient requires to remain in the bath varies considerably, chiefly with the initial temperature of the water and the extent to and rapidity with which this is reduced, but the main point to be attended to is the condition of the *patient's temperature*, and the question of the time for his removal is settled by this as well as his general condition, rather than by any arbitrary data as to the duration of the cold bathing. It is apparently not advisable to have the temperature of the water too low on his first immersion, but the subsequent cooling of the water is usually rather grateful to the patient than otherwise.

Now it is quite obvious that this method of treatment by immersion in a bath implies a condition of matters frequently unobtainable, viz., several (more or less trained) assistants and a conveniently situated or portable bath—conveniences as a rule to be had only in a well-equipped hospital. But, as a result of a wider diffusion of the good results obtainable from the employment of cold in this condition, ample evidence has been now collected to prove that other methods than that of cold bathing are equally efficacious.

One of those most frequently employed is the *general ice-pack* to the whole body, the patient (covered merely with a thin sheet and lying upon waterproof sheeting) being packed round with

[1] *Scot. Med. and Surg. Journ.*, iii., p. 532.

pieces of ice, some of which are rubbed over the head and chest, while the lower surface of his body lies in a pool of almost ice-cold water. [In the case of A. P. first recorded here, this method was employed in his initial attack after the cold bathing had been done, but the method of treatment by the ice-pack was so much more easily carried out, that when vigorous treatment was again required in his case this method was always subsequently resorted to rather than the bathing. The difficulty of keeping a comatose patient in a bath of water, the quantity of which is being changed by addition of colder water, without letting the mouth get under the surface is sometimes very great, especially when, as in this instance, the patient is a tall and very heavy man.] Here again, as in all the methods employed, the same precaution as to guarding against excessive reduction of temperature is essential, the patient being lifted on to a dry bed as soon as a fall of his internal temperature to 102° is recorded.

Should no ice be available, as may be the case in country practice and especially in summer—the most frequent season, as we have seen, for the condition arising—ordinary cold water may be used, sheets or towels wrung out of this being continuously applied to the patient, the surface of whose body may at the same time be fanned to aid the evaporation of the damp sheets and so produce a further abstraction of heat. It has even been suggested that a fairly satisfactory substitute for a cold bath may be obtained in almost any house by having one end of the bed raised while the lower end is directed over a tub, and the patient vigorously "sluiced" down with pailfuls of cold water, which runs off into the tub at the foot.

When the temperature, as in some cases, is not so excessive, less vigorous methods of application of cold may be sufficient, such as large ice-bags to the abdomen and chest, or the ordinary cold pack by means of a sheet wrung out of cold water; in milder cases even tepid or cold sponging of the surface of the body may suffice. Such methods of treatment are adapted more for cases when in the earlier stages of hyperpyrexia, and their chief rôle perhaps comes under the subject of the *prophylaxis* of the condition.

By one or more, then, of the above methods of application of cold to the surface of the body is the condition of hyperpyrexia in acute rheumatism now almost universally treated, and in regard to all of them the following facts are to be noted as having been practically proved:—

1. *That the presence of visceral complications in the patient is no contra-indication to the employment of cold in hyperpyrexia.* Numerous cases have been recorded where evidence of severe visceral complications was present in patients who developed hyperpyrexia and who nevertheless underwent the severest forms

of treatment by cold with perfect success. Thus one of the very earliest recorded instances—Wilson Fox's second case—had (14)[1] "double pleuropneumonia and pericardial effusion," and yet not only was the hyperpyrexia successfully combated by cold baths but complete recovery from the various complications ultimately ensued; while a similar instance is reported by Dr Monro quite recently,[2] the patient in this case also making a complete recovery in spite of double pneumonia, although bathing had to be continued for nearly a fortnight.

I have already alluded to the possibility of some risk being run of congestion of internal organs ensuing as a result of the chilling of the surface, but the fear of this must not deter us from employing what is admitted to be the only remedy for an otherwise certainly fatal condition.

2. *The remedy should be tried even in cases which, from the patient's general condition, appear absolutely hopeless.* To illustrate this I need only quote Dr Fox's description of his first successful case, who had a temperature of 110° when the treatment was applied. He says (14)[3]: "She was absolutely unconscious, the pulse was imperceptible, the face highly cyanotic, and she was drawing the few last irregular, gasping, stertorous respirations which commonly precede the act of death," and yet this patient left hospital perfectly recovered by the thirtieth day thereafter. After such a record one need never despair of saving even the most desperate-looking case, and many similar records could easily be adduced emphasising the necessity for trying to rescue even the most hopeless cases. No doubt instances of patients having died while in the bath have been published (and possibly still more remained unpublished), but the absolute certainty of a rapidly fatal termination to the condition when untreated is our warrant for employing what may appear to the relatives a drastic remedy.

The importance of the administration of *stimulants* not only by the mouth and per rectum but also hypodermically if need be, is insisted on by many observers, and in some cases very large amounts have been administered—nearly 30 ounces of brandy alone, besides eggs and milk, were given by Fox in the course of twenty-four hours to one of his cases. It is advisable to give some alcoholic stimulant not merely before the treatment by cold is begun but during the bathing as well, and often, as in the cases of A. P. and A. S., for some considerable time after. It is worthy of note, however, that the earliest recorded successful case—that of Meding—appears to have had no stimulants administered, according to Dr Fox. Obviously the question of the necessity for their administration is to be decided by the *general condition* of the patient apart altogether from his *temperature record*.

[1] p. 37. [2] *Glasgow Med. Journ.*, April 1898, p. 283. [3] p. 4.

But unfortunately the reduction of the initial hyperpyrexia by the cold bath is frequently insufficient to put an end to this dangerous complication. In many cases the excessive temperature tends to recur again and again, so that the bath may have to be employed repeatedly ere the case terminates, two patients mentioned in the Clinical Society's Report having been bathed no less than twenty-six times before their temperature resumed the usual normal limits. Similarly cases which have been treated by an ice-pack or wet-pack may require such remedies to be employed more than once, while in other instances—*e.g.*, the case of A. S. during his second attack of hyperpyrexia—a milder form of the application of cold, such as sponging or an abdominal ice-bag, may be sufficient—once the excessive temperature has been reduced—to maintain it within ordinary pyretic limits. A method which would appear to hold out prospects of success in the treatment of these cases of recurrent hyperpyrexia is the employment of the *continuous ice-coil*, by the use of which the pyrexia may be kept within moderate limits more persistently than is possible when *intermittent* cold applications are relied upon.

Many of the ordinary antipyretic drugs have also been employed with the same object as in the case of A. P., to whom at various times salicylate of soda, antipyrin, and antifebrin were administered to prevent the temperature passing to hyperpyretic limits, but too often, as in his case, with but little effect. The use of such drugs, however, *to prevent the temperature rising again* to extreme heights must be distinctly differentiated from the use of the same remedies to *cure hyperpyrexia when present*—a question to be alluded to presently.

I have yet to mention what is perhaps the most interesting result of the treatment of hyperpyretic patients by means of cold, viz., the marvellous *improvement in the general condition of the patient* which so frequently occurs. Nothing is more striking than to see the patient, who when first placed in the bath was perhaps wildly delirious, or, more probably, absolutely comatose, with stertorous breathing and imperceptible pulse (the condition of my first case, A. P.), become in a few minutes conscious and able to speak intelligently, the respiration returning to its natural condition, while the pulse improves in strength as it falls in rate. It is probably one of the most instructive lessons in the prompt and judicious employment of the appropriate remedy that medical therapeutics can show. No doubt such a remarkable result apparently goes to prove the view held by some, that the hyperpyrexia is the cause of the whole condition rather than, as we are inclined to believe, merely one of its manifestations, but the well-known fact previously mentioned, that temperatures as high, and even higher, occur under many other conditions

without such coincident nervous phenomena, must never be forgotten.

Antipyretic Drugs as Remedies for Hyperpyrexia.

Reference has more than once been made to the uselessness of the ordinary pharmaceutical preparations employed for the control of *pyrexia* in preventing or restraining the *hyperpyrexia* of rheumatism. In the earlier years when its treatment by ice and cold baths was introduced by Meding and Fox, there was no such armamentarium of antipyretic drugs as is now at our command, but in spite of the multiplication of such remedies none has been found to have any material power in controlling hyperpyrexia. I need only allude to one of the most recent illustrations of this powerlessness of such remedies in the treatment of the condition. The case, which is reported by Dr Sloman,[1] was that of a female, aged forty-one, who was treated for "rheumatic pains in the joints" with "salicylate of sodium every four hours, and Dover's powder night and morning." The temperature kept "about 102° for four days, when it suddenly rose to 105°." Antipyrin was then given "in frequent doses," but the temperature, "after ranging between 104·2° and 105° for twenty-four hours, rapidly rose to 110·5°" and death ensued.

The *pyrexia* of acute rheumatism may be said to be under our control, by means of the salicyl compounds, to a degree that has scarcely any parallel amongst other diseases, and the extraordinary change in the temperature records of cases of acute rheumatism, which has been brought about by the wellnigh universal adoption of these remedies, is one of the most notable triumphs in recent practical therapeutics. But, as we have seen, not only does hyperpyrexia ensue in cases which are under this method of treatment—and indeed apparently improving under its employment—but the various salicyl preparations, even in large doses, have been repeatedly proved to be absolutely valueless in checking the condition. The reason assigned for this lies in the fact, as we have seen, that hyperpyrexia is believed to be due not to an excessive degree of the ordinary pyrexial process of acute rheumatism but to a loss of control of metabolism. *Anti-rheumatic* drugs, therefore, could not be expected to be of any service. But what of those remedies which are "antipyretic" by other methods? Without entering into the theories held as to the means by which these various preparations bring about their results, it is only necessary to state the fact, which has been shown over and over again by published records, that each in turn is practically powerless in dealing with the "excessive" temperature in this condition. Perhaps it is only right that

[1] *Brit. Med. Journ.*, 1898, i. p. 817.

I should refer to a case which I find reported by Dr Godfrey,[1] which apparently contradicts this statement. Briefly summarised, it is that of a female, aged thirty-three, who was seized with an ordinary attack of acute rheumatism on October 1st, perspiration being "profuse." On the 4th the temperature, which had been previously about 102°, ran up to 106·5° and "perspiration stopped," while again on the 5th it rose to 106°, and "on both occasions antipyrin gr. x quickly reduced the temperature." Next evening, however, the temperature, which had been 100·6° at 9.30 P.M., was found five hours later to be 112°, the patient being comatose and dying half an hour later in spite of cold packs. Despite such a record, however (which appears to show that antipyretic remedies were of avail at the outset), there can be little doubt that, in the meanwhile, this fact appears certain, that attempts to combat the condition by such means are not only *fruitless* but *dangerous*, for it has been clearly proved that the higher the temperature before the treatment by cold is commenced in any case so much the less is the prospect of success.

In regard, however, to the employment of such antipyretic drugs, there is another aspect of the question ; are they of any service in *preventing the recurrence of* hyperpyrexia once the temperature has been brought within ordinary limits by the use of cold applications? To this I think the answer can not be so unhesitatingly negative. No doubt in the first case described, A.P., the various drugs successively administered—antipyrin, antifebrin, sodium salicylate—appeared to exercise no control whatever on the rising temperature, which had always to be reduced by means of cold, but in milder cases, at all events, published records seem to indicate that such drugs as quinine regularly administered have some influence in preventing excessive rises of temperature, though it is difficult to prove this, other means, *e.g.* the use of an ice-cap to the head or abdomen, being frequently combined with the administration of drugs. Theoretically, at all events, they might be expected to prove of service, for once the control of the heat-regulating mechanism has been restored, any remedies which *facilitate the maintenance of this power*—such as any drugs which will diminish metabolism —ought to be of value. But so far as regards the treatment of hyperpyrexia in rheumatism when actually present, Wilson Fox's words, written in 1871, are equally applicable to the present day: "The fact remains, therefore, that at present the only agent on which reliance can be placed is the external application of cold" (14).[2]

Before passing on to consider the question of the prophylaxis of the condition, I would draw attention to a somewhat interest-

[1] *Brit. Med. Journ.*, 1893, ii. p. 993. [2] p. 32.

ing contribution to the treatment of hyperpyrexia in rheumatism by a French physician, H. Barré.

The frequent recurrence of this phenomenon, after it has once been checked by means of cold applications has already been referred to, one of the causes of death being not unfrequently cardiac failure from exhaustion following repeated excessive temperatures. It was in such a case as this, when the temperature, in spite of sodium salicylate and repeated baths, still tended to reach excessive limits, that Barré adopted the method of treatment by what he calls "disintoxication of the blood." The following is a summary of the notes of the case as recorded in the *Medical Press and Circular* (2)[1]:—

Girl, aged twenty, showing symptoms of acute rheumatism lasting eight days, during which the pains diminished under salicylate of sodium, and the temperature varied from 98·9° to 100°.

June 9 (the following day).—Restless; wandering; headache; pains ceased; temperature 104°. Bath ordered every three hours; 5 grammes of sod. salicylate given during the day. She felt better after the baths, but not for long. The temperature having risen to 105·4°, she was bathed every two hours. At 7 P.M. it was impossible to take her temperature. She had clonic and then tonic convulsions, which were succeeded by coma; her temperature at 11 P.M. being 107·6°. At 1 A.M. Barré applied his process, 500 grammes of blood being withdrawn from one arm, while the same amount of artificial serum was simultaneously injected into the corresponding vein of the opposite arm. The temperature then fell to 104·9°. The process was still further continued till 750 grammes had been exchanged, when consciousness returned, and her temperature was 103·2°. During the following day she slept calmly at intervals, the axillary temperature was 100°, and the baths were resumed along with the sodium salicylate. Improvement and ultimate recovery followed.

[I have throughout the above record converted the *Centigrade* temperature records into *Fahrenheit* for convenience in comparison with others cited.]

It is of course unjustifiable to draw conclusions from a single record, but, as previously mentioned, such a method of treatment suggests the possibility of some toxic product in the blood being the cause of the condition. At any rate the successful issue in Barré's case shows the propriety of trying the method in obstinate cases of hyperpyrexia in rheumatism. Fox has recorded in his book (14)[2] a case in which venesection to the amount of 20-30 ounces was practised with a view to combating the hyperpyrexia, but without effect, although the violent delirium ceased,

[1] p. 230. [2] p. 44.

and in which subsequent cold bathing failed to save the patient, though the temperature was reduced on each immersion. As his case, however, was complicated by the presence of "intensely fetid colliquiative diarrhœa," it can hardly be compared with Barré's, and at any rate the coincident transfusion of the artificial serum while venesection is being performed may enable the patient to withstand more easily the additional treatment by cold applications.

Prophylactic Treatment.

We now come to the second aspect of the treatment of hyperpyrexia—its prophylaxis. From the excessive mortality amongst the cases of acute rheumatism which develop this complication, it is evident that the question of its prevention is all-important, and still more so in view of the facts we have already seen, viz., that the earlier proper treatment is commenced before excessive temperature limits have been reached, the more hopeful is the prognosis. Are there, then, any means by which the occurrence of the dangerous complication described as rheumatic hyperpyrexia can be altogether prevented? To such a categorical question the reply, I think, can only be a decided negative. We have as yet no therapeutic measure by which the condition can be prevented, though we certainly do possess in cold applications a means whereby one of its manifestations—excessive temperature—can be prevented. But prophylaxis is made still more difficult in the case of this complication by reason of the fact that in many of the instances there is no warning of the condition whatever, and, as not infrequently is the case, the hyperpyrexia is *already present* without the patient or his friends being cognisant of the fact until (it may be a fortuitous) investigation of the body temperature reveals the fact, as in the case of the first example of the condition given in this paper. But for the fact that his medical attendant chanced to pay his daily visit at that hour the patient would not have learned that he was in a condition so dangerous that half an hour later he became comatose.

Fortunately, however, there are in many instances prodromal symptoms of sufficiently pronounced a character to attract the attention not only of his medical attendant but even his friends, and it is in such cases that there is an opportunity for the application of prophylactic treatment. The subject, however, presents points of difficulty. The most frequent precursor of hyperpyrexia in rheumatism is, as we have seen, *Delirium*. The Clinical Society's Report (7) [1] shows that out of 53 cases in which the date of occurrence of delirium with

[1] p. 270.

reference to the hyperpyrexia was noted, in no less than 24, or 45%, did it *precede*, and in 19, or 36%, *accompany* the onset of that condition. Now the fact of such a considerable percentage exhibiting this easily recognisable prodromal symptom would appear to suggest the likelihood of prophylactic treatment being frequently applicable.

But our *chief*—indeed one might say our *only*—preventive measure is the external application of cold to the patient, and the question that consequently arises is this—Does the *presence of delirium* in a case of acute rheumatism—not due, so far as can be made out by careful examination of the patient, to the presence of *visceral complications* such as *e.g.* pericarditis—warrant us in commencing treatment of the patient *by cold* applications even in cases in which the temperature is of quite a *moderately pyrexial* character or even *absolutely normal*? To show that cases do occur under this latter category, I need only refer to an instance in the Royal Infirmary, Edinburgh, of a patient under the care of Professor Fraser, by whose kind permission I am enabled to quote from his hospital records the following brief summary of those points which alone concern us here:—

Professor Fraser's case.—A school girl, G. O., aged twelve, was admitted to the Royal Infirmary on Oct. 21st, 1896, for acute rheumatism. "Characteristic rheumatic sour-smelling sweat; knees, ankles, and wrists are painful, but only the ankles are swollen." Under treatment by salicylate of soda the temperature was normal by the 23rd October.

24th Oct.—"Perspiring; nothing cardiac." *Temperature normal.*

25th Oct.—Temperature normal. Patient rather stupid in the evening and "wandering."

26th Oct.—Temperature normal still. Delirious; "occasional twitching of right hand." By evening she was "wildly delirious and shouting incoherently." No albumen in urine. *Temperature still normal.* Pulse 110.

27th Oct.—"Delirium now almost gone" (5.30 A.M.). Patient sinking into a state of coma. "*Temperature has now risen to* 100°." At 8.30 A.M. she was comatose, and at 10.30 A.M., when she died, the temperature had risen to 104·4°, an ice-cap having been applied to the head when the temperature reached 103°.

The autopsy revealed nothing to account for the condition, and a careful analysis made by Professor Fraser of the salicylate in use in the wards at the time, revealed no deleterious products in the drug.

Now, while it might be urged against my quoting this very interesting case that as a matter of fact up till the time of death the temperature had not reached the limit we have decided to

regard in this thesis as hyperpyretic, there can be no doubt that the record is one of an instance of the same condition, although the patient succumbed before the temperature had risen to an extreme height. The important point, however, that we have to deal with at present is this.—Here was a patient in whom the onset of coma with rise of temperature was *preceded for nearly two days* by *delirium*, during which time *the temperature remained perfectly normal* (as shown by the four-hourly charts in the ward journals). There being, as stated in the record of the case, no cardiac or renal condition to account for this delirium, would *the treatment* of the condition *by cold* applications have been *justifiable*?

(*a*) Now, that the *application of cold* to *delirious hyperpyretic* patients is almost always followed by *subsidence* of the delirium and the *return of consciousness* is not only true but it is one of the most prominent and satisfactory characteristics of this method of treatment as already mentioned. (*b*) Another fact which we have also emphasised has, however, to be taken in conjunction with this—that *such application* of cold is followed by a *fall of temperature for some time after* the patient is removed from the cold bath or pack; (*c*) while *reduction of his temperature* to *an excessive degree* as a result of this treatment is apt to be attended by dangerous, if not fatal, *collapse* of the patient. The difficulty in answering the question propounded above is now obvious. To apply for the *cure of the delirium* that remedy which is most likely to be successful is to subject the unfortunate patient to the *risk of collapse* as a consequence of such treatment; while to *delay doing so* entails the risk attendant on those cases characterised by onset of delirium for some considerable time prior to the occurrence of the hyperpyrexia, in which, as we have previously seen,[1] the mortality is brought out by the Clinical Society's Report as very high. Were it possible to subdue the delirium by an application of cold so moderate as not to cause subsequent collapse of the patient, then, undoubtedly, such treatment is to be advocated; but no one would, I think, be prepared to recommend the use of stronger measures, even though the probability of subsequent hyperpyrexia is quite recognised.

At what temperature treatment by means of cold should *be begun* is a question which is somewhat difficult to settle. The fact that delirium (of serious prognostic significance) may appear when the temperature is perfectly *normal* warrants one, I think, in saying that the time for adopting this treatment is to be decided rather by the *general condition* of the patient than merely the *state of his temperature*. Different writers vary as to the *height* to which the temperature should be allowed to rise

[1] *Scot. Med. and Surg. Journ.*, iii. p. 536.

before employing the cold bath. Thus *Fagge* says (13)[1]: "When the temperature is rising for the first time to a dangerous height it should not be allowed to reach 106° . . . before the bath is used. . . . Subsequently the bath should be had recourse to as often as the temperature rises to 105·5°."

Bryant, again, says (3)[2]: "When the temperature approaches 105° and particularly if nervous symptoms be present, a cold bath should be at once given"; while the *Clinical Society's Committee's* report of earlier date similarly indicates (7) "the advisability of having recourse to the bath where the temperature reaches 105°."

I cannot see any special reason for delaying so long before commencing the treatment by cold. The fact that cases not infrequently occur which prove *fatal before such a temperature* as 105° is *ever attained*, *e.g.*, the case of Professor Fraser's cited above, as also that group, in the Clinical Society's Report previously referred to, of "cases with the symptoms well-marked, characterising usually the hyperpyrexial cases *but without marked excess in temperature*," justifies one, I think, in advocating the earlier adoption of what is so well recognised as the most efficient remedy. It is rather interesting and significant to note that the statements in regard to the degree of temperature at which bathing should be employed is different in the *earlier* edition of Fagge's work (1884) where he says (13):[3] "When the temperature is rising for the first time it *should be allowed* to *reach 107°* . . . before the bath is used. . . . Subsequently it should be had recourse to as often as the temperature rises *to* 106°, but *not below* 105·5°." The tendency thus nowadays to commence vigorous treatment earlier than was formerly the custom is evident when these remarks are compared with the same authority as quoted above.

Briefly then, I would venture to suggest the following as a summary of the chief points in reference to the *prophylaxis* of rheumatic hyperpyrexia:—

1. Cases in which the pyrexia shows a tendency to *rise* instead of *decline* under full doses of the salicyl compounds, and in which *no intercurrent condition* can be detected which might account for the increasing pyrexia, *should be treated at once by cold applications without waiting for the onset* of *nervous symptoms or other prodromata of rheumatic hyperpyrexia.*

2. *When delirium appears in* a case which *exhibits pyrexia*, and no intercurrent visceral complication can be made out which might account for its presence, *the immediate employment of cold is called for.*

3. *Should delirium appear while the temperature remains normal* a *mild form of cold application—e.g. an ice-cap* to the head

[1] p. 712. [2] p. 400. [3] p. 548.

—should be employed, and on the appearance of *pyrexia* more *vigorous methods* ought to be adopted *without waiting for any extreme degree of pyrexia* (*e.g.* 105°) *to be reached.*

4. Cases *in which the hyperpyrexia* is, as it were, accidentally *discovered to be present* offer, of course, no field whatever for prophylaxis, but *treatment by cold should be commenced at once without waiting for the appearance of nervous symptoms or attempting to reduce the temperature by means of any antipyretic drugs.*

The preceding are merely put forward as a suggestion, but that there is a distinct need for more definite and decided teaching in our text-books on this subject of the treatment of rheumatic hyperpyrexia is shown, I venture to think, by records of cases, such as the following, in which treatment by medicinal remedies alone is relied on to combat the condition. It appeared [1] in a recent number of the *British Medical Journal* and, briefly summarised, is as follows :—

S. F., first seen *Jan.* 13*th*, suffering from rheumatic fever, "the heart labouring badly and a mitral murmur." Sod. salicylate gr. x four-hourly and a precordial blister were ordered.

Jan. 17*th*.—"The affected joints quite relieved, but from that time the daily temperature was about 105°." The salicylate was stopped in case it might be disagreeing.

Jan. 19*th* (midday).—The temperature was "fully 106°," and "she complained of a sinking feeling at her heart; slight tympanitic distension of the belly was noted, but otherwise she did not look very ill." Phenacetin in 10 grain doses was ordered, but of these she got only one. During the *night* the medical attendant was called and found her dying, the temperature in the axilla, "though this was wet with perspiration," being then 110·7°. "After the breathing had ceased for a short time" the heart was audible to the stethoscope, "beating regularly and distinctly."

It would seem that too often the somewhat vague teaching in most of our text-books as to the adoption of treatment by cold in this condition, leads to *delay* in the application until the *various phenomena* are *so fully developed* that the case then appears *too hopeless* to warrant such heroic treatment. Greater benefit might, I think, result from a clearer pronouncement on the use of this method, *to prevent* the occurrence of such a deadly complication.

There appears to be one other matter in regard to prophylaxis to which reference should be made.—Is it possible by a more efficient treatment of the *attack of rheumatism* in its *early* stages to prevent the occurrence of hyperpyrexia, or at anyrate diminish the tendency to it? On the hypothesis that hyper-

[1] *Brit. Med. Journ.*, 1898, vol. i. p. 618.

pyrexia is a result of exhaustion of the heat-regulating mechanism in its attempt to control the excessive heat-formations present in acute rheumatism, it would seem *theoretically* true, at all events, that the earlier this excessive heat-formation is put an end to, the sooner will the thermotaxic function return to normal, and hence paresis from exhaustion would be less apt to occur. Now if, as Maclagan suggests, the salicyl compounds act by destroying the rheumatic poison (which produces the excessive heat by its action upon the nidus present in the body), then obviously the earlier the patient is brought completely under the influence of the salicyl treatment the sooner will the excessive heat-formation be put an end to, and the strain taken off the thermotaxic mechanism. If this reasoning be correct, then, *another element* in the *prophylaxis* of hyperpyrexia will be the *early and complete subjection* of the case to the *salicyl compounds*. This, according to Maclagan, is to be obtained by the administration of hourly doses of 15-20 grains of salicine or sodium salicylate, by which a fall of temperature to normal should be obtained in forty-eight hours.

Finally, as pointed out by Fagge, every precaution should be taken to avoid all treatment, general or local, which would in any way tend to check perspiration. The skin plays such an important part in rheumatism as regards the elimination of heat through evaporation of sweat, that we should be very careful to prevent its free action being hampered in any way, directly or indirectly.

Whether the use of pilocarpin in those cases in which sweating has ceased prior to the onset of hyperpyrexia is likely to be attended with success, is a question on which I have not found any satisfactory evidence, although cases recording its use in this respect have been published. If the cessation of sweating arises, however, from *paresis* of the controlling mechanism, such a remedy would possibly be of little service.

Summary of Conclusions.

The main conclusions I would draw from the consideration of the whole subject of hyperpyrexia in rheumatism are these:—

1. That the condition is more prone to occur in the warmer months of the year, and apparently with greater frequency in certain years.

2. That while it is very difficult to estimate at all accurately the frequency of its occurrence, probably this is about ·5 per cent. amongst *adult* cases of rheumatism.

3. That the occurrence of hyperpyrexia in rheumatism is

practically confined to cases of this disease in persons over fourteen years of age.

4. That the rare instances of hyperpyrexia which occur under that age are in cases of rheumatism which present the *adult* type of the disease.

5. That the absence of hyperpyrexia from rheumatism in children is probably to be explained as the result of the *type* rheumatism assumes in them rather than a mere question of the *age* of the sufferer.

6. That *males* show a much greater proclivity to the condition than females, which may possibly be associated with the greater strain habitually put upon their thermotaxic mechanism.

7. That the condition is most apt to occur in "first attacks" of rheumatism.

8. That persons who have once suffered from the condition would probably be apt to have a recurrence of it in any subsequent attack of the disease (although no case of such recurrence has previously been published).

9. That it may ensue at any stage in an attack of rheumatism, but probably the second week is the most common period of its occurrence.

10. That it may arise in even *mild* cases of rheumatism, severe rheumatic symptoms being no essential to its occurrence.

11. That the onset of hyperpyrexia, while occasionally without warning, has usually premonitory symptoms, the chief of which is delirium.

12. That cases of true rheumatism showing *persistence of the pyrexia*, in spite of full doses of the salicyl compounds, should be most carefully watched, since hyperpyrexia frequently ensues in such instances.

13. That sudden cessation of the articular pains *without coincident fall of temperature* should lead to the suspicion of hyperpyrexia, especially if attended also by the cessation of sweating.

14. That Maclagan's hypothesis that hyperpyrexia is due to paresis of the heat-inhibiting mechanism from exhaustion in its attempt to control the excessive heat production of rheumatism, is the most feasible theory yet put forward in explanation of the condition, satisfactorily accounting for the more frequent occurrence of hyperpyrexia in adults than in children.

15. That the absence of rheumatic hyperpyrexia in children is a strong argument against the view that this condition is due to *visceral complications*, since it is especially in children that these visceral manifestations occur, and it is just in those cases that hyperpyrexia is not found.

16. That in view of the resemblance in several respects between rheumatic hyperpyrexia and "diabetic coma," further investigation of this subject might possibly throw fresh light upon the pathogenesis of both conditions.

17. That while the mortality of *rheumatism* is only about 3 per cent., hyperpyrexia is probably one of the most important immediate causes of death in this disease.

18. That the mortality of hyperpyretic cases is very high—probably over 50 per cent., but statistics are very variable because—

19. The mortality is greater the higher the temperature before treatment is begun; and

20. It is also greater amongst cases treated by means of antipyretic drugs alone.

21. That treatment by the application of cold in one of its various forms is the only justifiable method in cases of hyperpyrexia in rheumatism.

22. That this should be adopted even in cases apparently moribund, and even although visceral complications may be present.

23. That while there may possibly be some risk of congestion of internal organs as a result of this method of treatment, this does not justify the neglect of what is practically the only remedy for an otherwise fatal condition.

24. That the greatest care should be taken to prevent collapse ensuing in the patient as a result of the treatment by cold, which should be stopped entirely before the temperature falls to normal.

25. That antipyretic drugs, while practically useless in the treatment of hyperpyrexia *when present*, may perhaps be of some service in *preventing a recurrence* of this after the temperature has once been reduced by means of cold.

26. That in obstinate cases of recurrent hyperpyrexia the method of treatment by "disintoxication of the blood" adopted by Barré may probably be of service as an adjuvant to the treatment by means of cold.

27. That a greater attention should be paid to the *prophylaxis* of rheumatic hyperpyrexia, and that more prominence should be given to the advantage of commencing treatment by cold at an early stage before excessive temperatures are attained; in other words, the *general condition* of the patient, *rather than the mere height of his temperature*, should be the determining factor for commencing the treatment by cold.

28. That early and complete subjection of the patient to antirheumatic treatment would probably have some influence in preventing the occurrence of hyperpyrexia.

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Meetings of Societies

Edinburgh Medico-Chirurgical Society

THE third meeting of the seventy-eighth session of the Medico-Chirurgical Society of Edinburgh was held on Dec. 21st, 1898—Sir John Batty Tuke, President, in the chair.

Professor Chiene showed two cases of osseous deformity; one was that of a rachitic girl having in the centre of each clavicle an ununited fracture, but whether the condition was actually an ununited greenstick fracture or a congenital deformity it was difficult to say; in the same patient was also present double congenital partial dislocation of the hip-joint. Mr Chiene also showed a case of coxa vera.

Dr Affleck showed two patients, a brother and sister, thirteen and ten years old respectively, with Friedreich's ataxia. They had been mistaken for cases of chronic chorea, but, in the boy at least, the well-marked swaying staggering gait, the absence of deep reflexes, the curvature of the spine, the presence of the Romberg symptom, the frequent movements of the head and hands, and the nystagmus, left no room for doubt. In the case of the girl, though there was more of the nystagmus, the general symptoms were not quite so marked.

Dr Affleck also showed a case of Addison's disease of nine months' duration that had been treated with suprarenal extract, the administration of which had been followed by great constitutional disturbance, high temperature, and severe diarrhœa. After the remedy was discontinued, however, patient improved greatly and gained weight.

Mr Caird showed a patient, a man of fifty-eight, after removal of a rectal carcinoma by parasacral incision. Patient had suffered for nine months; now he was able to defæcate normally and had absolute control of fæces.

Mr Caird also showed a patient, aged twenty-one, after removal of the appendix and of a renal calculus. For nine years there had been more or less pain in the lumbar and iliac regions, and years ago typhlitis had been diagnosed. The kidney was neither palpable nor tender, but albumin and red corpuscles were present in the urine. Mr Caird had cut down on the appendix and, finding it closed and containing three soft fæcal masses, he removed it, and for a time the pain ceased. Its return then led Mr Caird to explore the right kidney, in which he discovered a calculus, and on its removal all pain and other symptoms had completely disappeared. The points Mr Caird wished to emphasise were the absence of pain in the testis

or inguinal canal and that the only symptoms present were lumbar pain and hæmaturia.

Dr Melville Dunlop showed a case of double athetosis in which the increased deep reflexes, the pawing movements of the feet, and the extreme extension of the metacarpo-phalangeal joints of both hands were well marked.

He also showed a boy in the atrophic stage of pseudo-hypertrophic paralysis, who, owing to the rapid advancement of the disease within the last few months, was unable to stand alone and could only walk if supported ; the hands and toes exhibited choreic or athetoid movements.

Dr Alexander James showed a case of scleroderma associated with Raynaud's disease and with atrophy of the thyroid. The patient, a mason, thirty-four years old and of good history, had received an injury to his right index finger twenty years ago, which had been stiff ever since. Lately it became blue and benumbed and the point had sloughed ; then the other fingers of the right hand became similarly affected and the points came off. The fingers of the left hand, the nose, and the ears were then affected in the same way and parts of the ears had sloughed. Three years ago the skin of the hands and fingers became very hard, there was difficulty in opening the mouth, and now his body generally was hide-bound, but especially his hands and arms. There was atrophy of the thyroid, the spleen was enlarged, touch and temperature sensations were not much interfered with, and there was no history of hæmaturia.

Dr James also showed a case of angio-neurotic œdema of the tongue in a little girl. The condition had commenced after an attack of coryza two years ago, and since then, at intervals of four months, the right side of the tongue had become tremendously swollen and in the intervals remained large and hard.

Dr Graham Brown, for Dr G. A. Gibson, showed a case of bulbar paralysis in a woman of fifty-seven and a case of pseudo-bulbar paralysis in a man of sixty-one.

Dr John Thomson showed a case of hemiatrophy of the tongue in a boy who presented no other sign of nervous disease. The condition had first come under notice two years ago on the occasion of the patient being brought to hospital for a simple digestive disorder.

Dr George Elder showed a boy of six years of age with marked congenital hemiatrophy of the face and malformation of the ear. The superior maxilla and the frontal bone were atrophied, and the mastoid was quite undeveloped ; the middle and inner ear were fairly healthy. He also exhibited a woman of fifty-four, who had previously enjoyed good health, in whom a Colles fracture had been followed by chorea of face, hands, etc., and by some mental enfeeblement.

Dr Allan Jamieson showed a drawing of a case of urticaria pigmentosa in a boy of one year old, which had commenced ten months previously. He next showed a man of forty-six with a papulo-squamous eruption, apparently syphilitic, affecting the palms. In July a patch appeared on the wrist, and after gradually spreading over the body it disappeared. Its affecting the elbows so markedly, Dr Jameson said, was unusual in a papulo-squamous eruption of a specific character, and there being no history of chancre or venereal disease, he was unable to trace the source of the infection. The condition had altogether improved under potassium iodide and mercury internally, and an ointment of oxidised pyrogallic acid and of salicylic acid locally. The next case shown was one of psorospermosis follicularis vegetans (Darier's disease), in which, however, psorosperms had not been found. There was a resemblance to lichen planus, and also to molluscum contagiosum; the treatment by salicylic vaseline had been successful. The fourth case was that of a young man with tylosis, in which treatment by salicylic and creosote plaster had been followed by good results. Dr Jamieson's final case was one of elephantiasis affecting both legs of a woman of forty-three, who was a native of the North of Scotland, who had never been abroad, and in whom there had been no previous inflammation or erysipelas. Examination of the blood after 8 P.M. had failed to show the presence of filaria.

Mr Hodsdon showed a girl of fourteen from whom he had removed a large plexiform neuroma of the axilla and upper arm. Dr Dowden exhibited a dissection of the tumour and microscopic sections of it. The median nerve had been found to pass through the centre of the tumour, which was of eight years' duration; there were also present multiple neuromata throughout the body.

Mr Wallace showed specimens of (1) renal calculus; (2) kidneys with calculi *in situ*; (3) fibro-adenoma removed from prostate; (4) portions of prostate removed from three cases by supra-pubic cystotomy; (5) four kidneys (three tubercular, one carcinomatous) removed by operation; (6) dermoid cyst from floor of mouth; (7) biliary calculi removed by cholecystotomy; (8) microscopic specimens of tumours, and of prostate.

Dr Logan Turner exhibited a skull (that of the famous Jenny Nettle) showing unusual development of the frontal sinuses.

Dr Dowden exhibited specimens of hydatids obtained from a tumour extending from the xiphisternum to the pubis; the patient, who came from Iceland, had had the tumour eight years, and from it cysts were still coming away.

Mr Cathcart showed an abdominal aneurism which caused difficulties in diagnosis and which illustrated how an abdominal

aneurism may burrow. At first there had been pain in the lumbar region, then a pulsating swelling was discovered in the iliac region, and finally a pulsating tumour in the lumbar region; between the two swellings, however, there was no definite continuity. The diagnosis lay between an abdominal aneurism which had extended downwards, and the possibility of there being two aneurisms. Patient got gradually weaker, and died of anæmia, owing to the blood having escaped into an enormous cavity. *Post-mortem* there was found an aneurism of the abdominal aorta immediately below the diaphragm, which had worked its way down into the iliac fossa, had then burst and formed a false aneurism outside the first. The original aneurism had then enlarged till it occupied the whole of the left side of the abdomen. On making a section, the iliac vessels were seen lying quite free; also, the secondary sac leading from the original sac into the lower swelling. (This case had been previously described in a recent number of this journal by Dr Ashley Mackintosh of Aberdeen.) Mr Cathcart also showed a case of multiple abscesses of brain.

Mr Caird exhibited preparations and drawing from an unsuccessful case of enterectomy, and suture for carcinoma.

Dr William Elder showed the heart and portion of intestine from a case of dysentery, with ulcerative endocarditis. Dr Elder also exhibited the brain of a man showing hæmorrhage into occipital lobe. The patient, while going to work, suddenly fell, became insensible, and remained so till death. Paralysis was at first more marked on the right side, but in a few hours it passed off; a few hours later the right side again became paralysed. *Post-mortem* there was found a large hæmorrhage under the dura of left side of brain, the origin of which was neither the meningeal nor the cerebral artery, but was a small opening in the cortical substance of the occipital lobe. The hæmorrhage had passed forward and underneath the base of the hemisphere.

Dr Elder next showed a brain from a case of word-blindness in a man of sixty, which showed much atheroma, especially at the base, the pial vessels of the left side being markedly atheromatous. The motor areas and Broca's convolution appeared to be normal. At the posterior end of the fissure of Sylvius, the Sylvian artery was found to have a thrombus which had produced an area of softening involving the posterior part of the supra-marginal convolution and the angular gyrus, and just touching the posterior horn of the lateral ventricle.

The following were exhibited:—(1) improvements on microtome, by Mr Cathcart; (2) a needle-case for sterilising needles and sutures, by Mr Caird; (3) a new form of æsthesiometer, by Dr Graham Brown.

Edinburgh Obstetrical Society

THE third ordinary meeting of the Society was held on January 11th—Dr Halliday Croom in the chair.

Among other interesting specimens a very large compound cystic ovarian tumour weighing 91 lbs. was shown by the President. The skeleton of an extra-uterine fœtus—practically complete—was shown by Professor Simpson. Dr Milne Murray exhibited an improved bolt for his axis-traction forceps, designed to meet the difficulties in occipito-posterior cases, and a fœtus and placenta showing a remarkable twisting of the cord which, at the distance of an inch from the umbilicus, measured not more than ⅛ inch in diameter. Dr J. W. Ballantyne passed round a copy of Boaistuau's rare *Histoires Prodigieuses.*

A long sitting was devoted to a consideration of Dr Ponder's paper on *Instrumental Aid in Parturition, with exhibition of a New Instrument.* His ideas have already been referred to in the report of a previous meeting. The instrument had unfortunately never been tried, and the general opinion of the Society was that it would be found to be quite impracticable.

Glasgow Medico-Chirurgical Society

AT a meeting on Friday, December 16th, Dr J. Lindsay Steven showed first a specimen from a case of multiple tubercular tumours of the brain in which there were striking symptoms during life; and secondly, specimens of perforating ulcer of the stomach, and perforating ulcer of the duodenum, both proving fatal from general peritonitis.

In the case of perforating gastric ulcer there had been a preliminary warning attack of severe epigastric pain a day or two before the sudden pain which was caused by the actual perforation. When the patient (a young female) was admitted to the Royal Infirmary, she was found by Dr Steven to be suffering from general peritonitis, her pulse being specially suggestive of that—small, thready, and about 140 per minute.

Dr Rutherford showed the stomach from a case operated on for perforation. The patient was a female, aged twenty-five years. There had never been hæmatemesis, but eight years before she had suffered from symptoms suggestive of gastric ulcer. The present illness was ushered in by sudden severe pain in the epigastric region. The abdomen was opened about seven hours afterwards. The stomach was adherent to the anterior abdominal wall and diaphragm by old adhesions, and, after separating these, a perforation was found about two inches m the cardiac end. This was tucked in by sutures. The

abdomen was irrigated by saline solution, and some of this was left in the peritoneal cavity, and a drain inserted for twenty-four hours. She died twenty days later from a pretty general infection of the peritoneum. *Post-mortem*, there was also found subdiaphragmatic suppuration, and a perforation in the posterior wall of the stomach, but Dr Rutherford was certain this was recent, and not the cause of the general peritoneal involvement, the course of which had been watched carefully. The temperature chart was shown. He was of opinion that the best plan in those cases would be to close the perforation, wipe out any extravasation, dispense with irrigation, and close the abdominal wound entirely, without drainage.

Dr Hunter had seen the last case in the Medical Wards of the Infirmary, and made the diagnosis of perforated gastric ulcer, which in this instance was not difficult. There was no diminution in the hepatic dulness. The pain two and a half hours after perforation was diffused all over the abdomen. The former history of the patient had strongly suggested the true nature of the case.

Dr M'Kendrick considered that the responsibility of the physician was great in these cases. Ewald had furnished statistics which showed the great importance of early operation, the mortality being 33 per cent. in cases operated on within twelve hours, 75 per cent. when operated on within twelve to twenty-four hours, and 87 per cent. at later periods.

The symptoms were varied, and he would like to know of any cardinal ones. Ewald had recorded some cases very deceptive in the absence of history and physical signs. In some cases laparotomy had been performed for severe pain, suggestive of perforation, and yet no such thing had been found. He had recently seen a case in the Western Infirmary where the chief pain had been in the right iliac region.

Dr Ritchie remarked on such cases, and also Dr Carstairs Douglas, who had been especially interested in the case of perforating duodenal ulcer, a class of case difficult to diagnose. Gastralgia some hours after eating was a symptom sometimes.

Dr Adamson asked if in either case of stomach ulcer there had been shoulder-pain present. In two cases he had had this year it was present in one and not in the other.

Dr Middleton referred to a case in which there was an abscess in the right iliac region, causing pain there, quite distinct from a subdiaphragmatic abscess directly connected with a perforation.

Dr Lindsay Steven, in reply, said that there had been no shoulder-pain in the case under his observation, and neither was this present in Dr Rutherford's case.

Dr Hunter and Dr Workman showed specimens of a cirrhosed

liver from a child six years old. This was a rare condition. There were 130 cases on record in literature. The patient had diarrhœa, jaundice, sickness and swelling of the abdomen. He was dying when admitted to the hospital, and there were râles at the bases of the lungs, and dulness, with enlarged spleen and liver, and evidence of much fluid in the abdomen. The child's aspect suggested chronic heart disease, but on examination the organ was found to be sound. There were no opportunities to make a complete diagnosis during life, but it was thought possible that the condition was one of tuberculous peritonitis, with infiltration of bases of lungs. The *post-mortem* rendered the case clear. The liver was shown to the Society, and also microscopic slides. It was found that the boy had taken a considerable amount of alcohol during his short life. When a baby he had had bronchitis, and was treated by frequent doses of whisky. He was fond of it, and afterwards it had been often given to him when his parents were having it, an event of common occurrence.

There was no specific history in the family.

The liver showed multi-locular cirrhosis.

Micro-organisms were detected in the liver cells, probably the bacillus coli communis.

Dr A. A. Gray then read a short paper on "Mycosis of the Larynx," and showed specimens and drawing. The condition had closely resembled tubercular disease of the larynx, but the examination for tubercle was negative, and revealed the mycotic nature of the complaint. Recovery ensued under treatment. Mycosis in the larynx alone, the buccal and nasal cavities being free, was a very rare condition. He suggested as possible that some of the cases of tubercular laryngeal disease, stated to have recovered, were really due to mycosis.

The Society thanked Dr Gray for his interesting paper.

Obituaries

Joseph Coats, M.D., F.F.P.S.G., Professor of Pathology in the University of Glasgow

THE death of Professor Coats on the 24th January has cast an unusual degree of sadness over the profession in Glasgow. He was still in the prime of life, being only in his fifty-third year; he had but recently attained to the dignity of the professoriate after teaching pathology since he was little more than twenty-three years of age; and still more recently he had acquired in the Western Infirmary a pathological laboratory second to none in the kingdom in which his favourite work

was to have been carried on. And when it was known that the year or two of recurring pyrexia and failing strength had been the foreshadowing of a now declared disease, it was felt that it was sad indeed. We can ill spare him. Singularly upright, unaffected, ingenuous and unworldly, he lent a dignity to the profession of which he was all unconscious. What he has accomplished as a pathologist is well known, and "Coats' Pathology" is an established text-book. All his work was the result of patient painstaking. It was not that he was brilliant, but rather that he never wearied. We may finish the phrase that comes to our mind, "He never wearied in well-doing." We need not attempt to say in how many ways. He would not have wished it. But his wife and children who mourn him to-day have the consolation of knowing that they have the heartfelt sympathy of many far and near who not only knew him but loved him.

J. W. A.

[*We propose to give a more detailed account of Professor Coats' life and work in our next number.—Ed.*]

James Arthur Sewell, M.D., L.R.C.S.Ed.

DR JAMES ARTHUR SEWELL died at Mentone on the 2nd of January. He belonged to a family long settled in Canada which produced some distinguished lawyers. His grandfather was the Hon. Jonathan Sewell, LL.D., Chief Justice of Lower Canada. His father was a physician in Quebec. Dr Sewell graduated at Edinburgh 1856, and at the same time took the diploma of the College of Surgeons of that city. He entered the service of the Honourable East India Company in 1857. During the Mutiny he was amongst the slender garrison which held the Fort at Agra, the only place remaining to us in the North-West until after the capture of Delhi. Dr Sewell was present at the action with the Nemuch Brigade and other fights with the mutinous Sepoy regiments about Agra. He remained eight years in the Indian Medical Service, after which he resigned his commission and went to Quebec, where he married a Canadian lady who only lived a few years after the marriage. About twenty years ago he went to London, where he set up in practice. He married for the second time Miss Elizabeth Ainslie, daughter of the late Robert Ainslie, Esq. of Elvingston. Everything seemed to promise a prosperous career, when there appeared symptoms of phthisis.

Against the attacks of this disease Dr Sewell struggled with heroic fortitude. He tried many health resorts, the South of England, Pau and the Engadine, but finally settled at his residence, Villa Blanche, Mentone, generally spending the summer months in Savoy and Switzerland. Dr Sewell was above six feet in height, a remarkably fine-looking man. He was of a cheerful and lively disposition and a kind and faithful friend. He had a ripe knowledge of his profession, and from his general culture and travels his conversation was most agreeable. He had much power of wit and humour, and a large fund of anecdotes. His long and often trying illness was cheered by the care and company of his wife and daughter. His only son is now in Canada.

W. W. I.

James Cappie, M.D., Edinburgh.

DR CAPPIE died in his house in Lauriston Place, on Saturday, January 14th, somewhat suddenly, after a very short illness.

His familiar figure will be much missed in Edinburgh, where he has practised for nearly fifty years. In his seventieth year, he looked a younger man, and sitting in his comfortable brougham, with his steady coachman, who had been long with him, and his sturdy, well-cared-for horse, the three looked as if with common care they could go on their quiet steady way for ever.

He seemed to enjoy wonderful health, and neither required or took a holiday. He once told the writer he hardly ever had slept out of his own house for thirty years, and asked, "if I did take a holiday, how would I divert myself?" His heart was in his work, and he certainly found in it a great reward, for no man was more thoroughly loved and trusted by his innumerable patients, many of whom he had brought into the world; many of the families he had attended for generations. He was especially skilled in midwifery, and enriched the pages of the *Edinburgh Medical Journal* and the *Transactions of the Obstetrical Society of Edinburgh* with various papers on important practical subjects.

For many years he held the onerous post of a Parochial Medical Officer, but had to resign its duties, in the exercise of which he had always been the friend of the poor, on account of his large private practice. Dr Cappie was not only a hard-

worked and successful general practitioner, but also one who devoted his spare time to scientific study. His "Essays on Medical Science," published in 1859, showed evidence of much originality of thought, and his various treatises on the Causation of Sleep and on Intracranial Circulation and its Relation to the Physiology of the Brain proved him to be not only a deep thinker, but a powerful polemic. His almost childlike simplicity and modesty of manner made it difficult for a stranger to realise the weight and value of the man.

By his death another link to the past is severed. There cannot now remain many who worked at Minto House. Dr Alexander Peddie, now enjoying a well-earned rest in a green old age, was probably one of Cappie's teachers. Few such teachers and pupils now remain. Dr Cappie was twice married, and leaves a widow, two sons, and six daughters to lament their loss.

J. B.

William Henry Murray, M.D.Ed., J.P., Galashiels

It is with great regret that we have to chronicle the death, on the 12th January, of Dr W. H. Murray, of Galashiels. None that saw him in September last would have suspected that the end was so near. He seemed so vigorous and strong, enjoying and making so good use of his life as would have led anyone to think that many busy and happy years were in store for him. But with the beginning of October came the first symptoms of the obscure abdominal affection which has carried him off in the midst of his days.

Dr Murray was an Edinburgh student. He graduated in 1874, and shortly thereafter went to Galashiels to assist Dr John M'Dougall, now of Cannes. In this Border town he has been located all his professional life. On Dr M'Dougall's leaving for Carlisle, Dr Murray took over the practice, which he has since conducted with much energy and ability, generally with the help of an assistant, but sometimes alone. No one could have been more diligent in business than he was, and few could have secured more the confidence of his patients. Nothing was of more importance to him than his professional work. His holidays were brief and infrequent, but he was always in such glowing health that he never seemed to need them. Happily for him and for his clients, he ever had very

decided opinions, which he firmly maintained. His judgment was of no weak and vacillating kind, and being clearly and decidedly expressed, was readily acquiesced in by those whom he advised.

But it was not only as a medical man that Dr Murray served his day and generation. He took an interest in all public questions, political and otherwise. He was a J.P. of Selkirkshire. Being a good public speaker, he was a leader of opinion in his district: at one time he was chairman of the local Conservative Association. He frequently spoke at meetings, and no one enjoyed a political contest more than he. Horticulture also claimed his attention. He was the chairman, and the most energetic member, of the Horticultural Society of his town, and he was an excellent grower of chrysanthemums. Along with the other medical men of the place, he did much to found the Galashiels Cottage Hospital, and at the time of his death he was medical secretary to the institution. At social gatherings his cheerful and genial disposition made him a welcome guest, and he could sing a good song. He had troops of friends, and being a son of the manse himself, it was natural that he should number amongst them many ministers of the Church.

The three months of his anxious and painful illness were borne by him with patience and courage. It was characteristic of him that until near the end he did not despair. Though quite aware of the opinion of his medical attendants, he clung to hope as a brave man should. He must have been a good patient.

Dr Murray leaves a widow and four children. His body was followed to the grave by a large company of his fellow-townsmen and many friends from a distance, amongst them not a few of his medical brethren. All mourned that a life so prosperous and so useful had been cut off at the age of forty-seven ; that his sun had gone down while it was yet noon.

R. S.

Joseph Tillie, M.D.Edin., F.R.S.Ed.

To those of Dr Joseph Tillie's friends who had been watching with sympathetic interest his career under new, and it was hoped health-giving, surroundings in the Orange Free State, the tidings of his death on November 28th came as a great blow

and a bitter disappointment. They had been cheered from time to time to hear good news of him; now that the lung trouble, which had sent him, as it has so many others, from these shores an unwilling emigrant, was abating; again, that his supreme knowledge of remedies was being sought after by those among whom his lot had cast him; and yet again, that his success as a consultant was bringing him and his devoted wife into something like freedom from immediately pressing financial cares. But it was not to be. Never quite free from a certain degree of fever, and with a recurrence of hæmoptysis in July last, Tillie left Springfontein for East London, in Cape Colony; but the change was without benefit, and four months later the end came. "A sad incident," says the East London paper, "in connection with the death of Dr Tillie, was that his children arrived yesterday by train, too late to see him alive."

Dr Tillie was an Edinburgh man, born, bred, and educated. With the advantage of several years training in business matters in a Bank (the Union) he took up the study of medicine in 1882, and passed with many honours through the medical curriculum in four years. He graduated M.B., C.M. with first-class honours in 1886. During his course he took a Grierson bursary, and at graduation won the James Scott Scholarship in Midwifery, and these were only the first of a series of distinctions which afterwards included the Vans Dunlop Scholarship (1887), the Gunning-Christison Prize (1889), and the greatly coveted University Gold Medal for the M.D. thesis (1889). Through the gaining of the Scott Scholarship he was appointed to be Resident Surgeon in the Edinburgh Maternity Hospital in Professor Simpson's term in 1886-1887; and he acted also as Resident Surgeon under Mr Miller and as Resident Physician under Professor Fraser in the Royal Infirmary. It was, however, his work in Leipzig under Boehm which determined his after-career, for he returned from Germany with his mind filled with the possibilities of modern experimental methods in the investigation of the action of drugs; and he found in the appointment of senior assistant to the Professor of Materia Medica in the University of Edinburgh, and more especially in that of University Lecturer on Experimental Pharmacology, full scope for the exercise of his undoubted talents in this difficult line of research. Six years

passed rapidly away (1889-1895), years which saw the completion of several worthy pieces of work, including a research into the action of a New Granada arrow poison, and one dealing with the occurrence of hæmoglobinuria in blood-pressure experiments. Then symptoms began to show themselves which pointed but too surely to tuberculosis, and the man who had literally turned night into day to obtain time for the carrying out of all the work which his busy brain had planned for the amelioration of the sufferings of others, had to think for once of himself. The death of his eldest boy from meningitis about this same time deepened the pervading gloom, and it was a saddened man who betook himself to South Africa in the end of 1895. There his wife and two remaining children soon joined him, and, as has been said already, his friends had begun to hope that in the Orange Free State the Tillies had found health and a happy home.

When it is remembered that Dr Tillie spent many hours every day in the University, teaching and experimenting, it is not to be wondered at that he was seen seldom in general or professional society; and when it is further borne in mind that he also, for some time at least, acted as one of the Physicians in the Western Dispensary and as one of the Infirmary Clinical Tutors the wonder rather is that he found any time at all for the other duties, not to say relaxations, of life. Yet to the writer, who was one of those whose good fortune it was to know Tillie both during his work time and in his far too brief play time, the remembrance of his enthusiasm for sport, his cheery good humour, and his always original and often really ingenious criticisms of men and things, remains as a sure proof that this side of Tillie's nature was not wanting but rather rigidly repressed. His lecture before the Edinburgh Health Society on "Patent and Quack Medicines" is full of quaint raillery and caustic criticism along with not a little really serious and good advice which even members of the profession would be none the worse of reading. But of course it is not on these things that his reputation rests and will rest, but upon the able pharmacological investigations on curare and allied drugs which he from time to time published, and upon the good qualities of mind which made him an inspiring teacher and a valued friend.

LIST OF THE LATE DR TILLIE'S CONTRIBUTIONS TO MEDICINE.

1. Report of Royal Maternity and Simpson Memorial Hospital for the quarter ending January 31, 1887. *Trans. Edinb. Obst. Soc.*, vol. xii. p. 122-127, 1887 (with Dr N. S. Fraser).
2. Ueber die Wirkungen des Curare und seiner Alkaloide. *Arch. f. exper. Path. u. Pharmakol.*, Leipzig, 1890, vol. xxvii. p. 1-38.
3. A Contribution to the Pharmacology of Curare and its Alkaloids (Abst.). *Journ. Anat. and Physiol.*, vol. xxiv. p. 379, 509, 1889-1890; and vol. xxv. p. 41, 1890-1891.
4. The Occurrence of Hæmoglobinuria in Blood-Pressure Experiments. *Journ. Anat. and Physiol.*, vol. xxv. p. 550, 1890-1891
5. On an Arrow Poison from New Granada, and on its Botanical Source. *Journ. Anat. and Physiol.*, vol. xxvii. p. 402-407, 1892-1893.
6. Patent and Quack Medicines, *Health Lectures for the People, Edinb.*, 12th Series, No. 7, 1893.
7. Preliminary Notice on the Arrow-Poison of the Wa Nyika and other Tribes of East Equatorial Africa. *Proc. Roy. Soc. Lond.*, vol. liii. p. 153-160, 1893 (with Prof. T. R. Fraser).
8. A Variety of Curara acting as a Muscle Poison. *Journ. Anat. and Physiol.*, vol. xxviii. p. 96-106, 1893-1894.
9. Acokanthera Schimperi: its Natural History, Chemistry, and Pharmacology. *Proc. Roy. Soc. Lond.* vol. lviii. (with Prof. T. R. Fraser).

J. W. B.

New Books and New Editions

A Practical Treatise on Sexual Disorders of the Male and Female. By ROBERT W. TAYLOR, A.M., M.D., Clinical Professor of Venereal Diseases at the College of Physicians and Surgeons, New York, etc. 8vo, pp. 451, with 73 illustrations and 8 plates in colour and monotone. London: Henry Kimpton. 1897. Price 12s. net.

THE title of this work is misleading, so far as the word "female" is concerned. The disorders of the female sexual organs treated of are limited to certain diseases, chiefly venereal, of the vulva, and they seem quite out of place in a book of this kind. The causes of sterility in women, however, are generally much better understood than those of impotence and sterility in men, and it is to the latter that the author has really devoted himself in this book. In the preface Dr Taylor speaks of "the failure of antecedent treatises on this subject to present clearly-cut and practical information on these disorders." This is far from true of such works as those of Acton, Curling, and many others, and one is tempted to suppose that an author who writes in this self-sufficient strain has not much information of value to

impart. It is only fair to say, however, that this is not the case. If the works of some of the older writers on the subject have not been referred to, and due advantage taken of what they contain, more recent authorities have been consulted, and the results of extensive personal experience has been at the same time recorded.

The various causes of impotence and of sterility in men are discussed concisely and in a reasonable way. Venereal affections are kept in the background, except so far as they influence sexual power by their after-effects. Such subjects however as posterior urethritis and vesiculitis, which come into this category, are brought well up to date.

The results of evil practices are considered in a scientific spirit, with an evident desire neither to minimise nor to exaggerate them; but we miss from these chapters the lines of treatment and general advice suitable to the milder forms of disorder from this cause which were so well laid down by Acton.

Priapism and sexual erethism have a chapter to themselves, and a short chapter is given to the unsavoury subject of sexual perversion. This is really a form of insanity, and its discussion is very properly not expanded, as it sometimes is to a very unseemly length.

The illustrations of microscopic structure are well chosen and clearly executed; those of naked-eye appearances are not so good. The woodcuts are rather coarse, and the numerous photographic reproductions of venereal disease in women, although good in themselves, are not wanted in such a work as this, and must add considerably to its expense.

As a reliable guide to the disorders of the sexual organs in men this treatise will be much appreciated. It would be difficult to name any other single book where these affections are so fully, and at the same time so concisely and practically, treated.

The Surgical Anatomy of the Lymphatic Glands. By C. H. LEAF, F.R.C.S. 8vo, pp. 70, 18 coloured plates, and illustrations in text. London: Arch. Constable & Co., 1898. Price 10s. 6d. net.

AMONGST several points of interest in Mr Leaf's little book may be noted the method he adopts to render the lymph vessels more easily recognisable by the dissector. He recom-

mends the repeated injection under considerable pressure of a solution of formalin into the vessels of the neck, and this solution, he tells us, eventually finds its way into the lymphatic vessels of the cadaver, and so hardens them as to render them capable of easy dissection.

Following this plan, Mr Leaf states that he has been able to make out with certainty a direct communication between lymph vessels and veins, *e.g.* in the groin. Should the existence of these "lymphatic veins," as Mr Leaf proposes to call them, be verified all over the body, it may throw light on some obscure clinical phenomena.

We are glad to see that the author deprecates the use of the terms "superficial" and "deep" as applied to the chains of cervical glands, and, as we think, more correctly speaks of them as "sterno-mastoid" and "internal jugular." The term "superficial" is certainly not very applicable to glands which lie beneath the deep cervical fascia, and it is not impossible that this misnomer may be responsible in part for the too "superficial" treatment of tubercular glandular abscesses in the neck, which are too often "opened and scraped out" without due attention being paid to the fact that the focus of disease lies beneath the fascia.

The book is carefully written and clearly illustrated, and is well worth perusal.

Diet and Food, considered in relation to Strength and Power of Endurance, Training and Athletics. By ALEXANDER HAIG, M.A., M.D., F.R.C.P. Crown 8vo, pp. vi. 86. London: J. & A. Churchhill. 1898. Price 2s.

WHEN the immortal Santillaine entered the service of that "tall, withered, wan executioner of the sisters three," Dr Sangrado, he had his first and last experience of a restricted dietary. "The usual bill of fare consisted of peas, beans, boiled apples, or cheese." The worthy doctor considered this food as best suited to the human stomach, and he believed that the less taken even of that the better. Had Gil Blas lived in these later days he would have found a disciple after his master's own heart in Dr Haig, who, in the small compass of the volume before us, explains his view of how life ought to be carried on. Flesh meat of any kind is anathema to him; eggs are no better.

Alcohol in every form is an extreme danger, so is tobacco; coffee and tea are even worse. On milk, pulses, cereals, nuts, garden vegetables and fruits should man live, and on these only. The author vaguely speaks of the awful consequences of breaking this rule of life, though the reader is disquieted to find that even on an ideal diet he is not certain to escape uric acid poisoning and its dire results.

It is well known that Dr Haig strongly upholds the view that the presence of uric acid in the body is solely due to its being ingested in the food. The obvious deduction is that, if uric acid is to be avoided, the foods containing it must be put aside. The arguments upon which this opinion rests are given at length in another volume written by Dr Haig, so that their consideration need not detain us here. But even were the reader convinced of all this, he would scarcely be able to subscribe to the dictum that "in diet lies the key to nine-tenths of the social and political problems that vex our nation and time." Everyone will agree that the food of the masses is not what it ought to be, but when in the world's history was it? Dr Haig goes on to declare that "diet as at present is the cause of a hideous waste of time and money; it produces mental and moral obliquities, destroys health and shortens life; in regard to the mind it leads to less and less mental range and activity, and, worse than all, to a narrow, mean, selfish view of the world and all it contains, and this mental attitude is in many cases the prelude to complete loss of mental power and balance—insanity."

It is only to be expected that the results of Dr Haig's dietary are as much exaggerated in an opposite direction. It gives "perfect, complete and continuous solvency of mind and body, lifts both to ever higher and higher levels of power, beauty, and the knowledge of the truth, forming at once the highest attainable development of the *mens sana in corpore sano*, and leading ever upwards into the higher sunlit slopes of that mountain which has no summit, or whose summit is in heaven only."

Writing of this kind takes away any possible good that this book might do as a plea for moderation and temperance. It is another example of an author becoming so much absorbed in a special study that he loses all idea of its relative importance. Uric acid may be a very bad thing, but to say that its

banishment would regenerate the world is only calculated "to excite in the sinful a smile." The world is as convinced as ever of the Roman poet's aphorism, and it is well that students of special studies should be reminded of it:

> "Est inter Tanaim quiddam socerumque Viselli.
> Est modus in rebus, sunt certi denique fines,
> Quos ultra citraque nequit consistere rectum."

Sir Benjamin Collins Brodie. By TIMOTHY HOLMES, M.A., F.R.C.S. Post 8vo, pp. 256, with portrait. London: T. Fisher Unwin. 1898. Price 3s. 6d.

THIS work is one of the series of "Masters of Medicine." No one will question the right of Brodie to be included in that honourable list, but many will think twice before accepting the dictum of Mr Holmes that Brodie "of all English surgeons now passed away seems to me to have brought the most acute intellect and the most powerful mind to the study of surgery after John Hunter." We will not greatly care to contradict him, so long as the term English includes only surgeons south of the Tweed. Still, Brodie was a Scotsman, a cadet of a very old and distinguished family of Moray, and in many ways his Scotch breed and training make their mark in the strenuous industry and shrewd commonsense which come out so characteristically in his future. His face in Watt's splendid portrait shows the grim firm mouth, high cheek-bones and sagacious nose so often seen in those born of northern race.

In many ways Mr Holmes is a fit biographer; himself a distinguished surgeon with a taste for surgical literature and a voluminous author, consulting surgeon to St George's Hospital, where Brodie did all his great surgical work, very zealous, like Brodie, for the honour of the profession and the dignity of the College of Surgeons, Mr Holmes has both knowledge and sympathy with the man's work and the man's aims, whose life he is trying to put before us. One thing he lacks: he had no personal acquaintance with Brodie in his vigour. He knew him only as an old man whose work was nearly over.

Somehow one feels the lack of the personal element in the book; we know Brodie not as a man so much as a surgical teacher and a philosopher. We read of an even, uneventful, regular progress to fame and fortune. A man with a good

start in life, favoured by great natural talents, industry, character and conduct, fortunate in his opportunities, very fortunate in the absence of any great outstanding rival, who had good health, a calm temperament and a long prosperous life. And yet something is lacking. Was it heart or imagination? As a medical student the unpleasantness of the dissecting-room and the dryness of the early study of anatomy repelled him, and still more "the low education and tastes of those with whom he was associated" (p. 29); he "acquired more substantial knowledge than can be acquired from such dull and humdrum discourses as lectures usually are" (p. 39). Opinions like these in a lad of twenty indicate the cold, somewhat cynical nature of the man. It may be quite a mistaken idea of his character, still this biography gives us no distinct picture of a heart behind the calm and calculating head.

A very great master of the healing art he certainly was, of a type now almost unknown, when specialism run to extreme makes men masters only of some limited corner of the science. Brodie was an "all-round" man, consulted not only on every branch of surgery, but also often in cases which would now be called purely medical. Consulted by the Crown in poisoning cases, an authority on psychology, he occupied a position which it is exceedingly improbable that any man in our profession will ever occupy again.

Diseases of the Skin. New and Revised Edition. An Outline of Principles and Practice of Dermatology. By MALCOLM MORRIS, Surgeon to the Skin Department, St Mary's Hospital, London. 12mo, pp. xv. 589, with 10 coloured plates and 26 illustrations. London: Cassell & Co., Ltd. 1898. Price 10s. 6d.

MR MORRIS' book is an old friend which appears in a new garb, for the familiar blue binding has disappeared.

As a new edition, it is unnecessary to consider the work in detail. Certain changes have been made. The separation between the description of the diseases and their treatment, which so many must have found inconvenient, is happily terminated, and one no longer needs to search diligently, and sometimes unsuccessfully, for advice on the treatment of a disease of which he has just read an eloquent description. The classification followed is Mr Morris' own, and it cannot be regarded as perfect.

Eczema, *Psoriasis*, and *Pityriasis* stand out each independently. *Local inoculable diseases* comprise those due to animal and vegetable parasites, and to "other micro-organisms." *General inoculable diseases*, Tuberculosis, Syphilis, Leprosy, etc.; a chapter is devoted to Diseases of the Glands and Epidermic Appendages, two to New Growths, one to Malformation, and all the rest of the diseases of the skin are "*dependent on Nerve Disorder.*"

The description, however, of each disease is excellent, and regarding many the lines to be followed in treatment are laid down with a precision which leaves nothing to be desired.

There are several new illustrations, some of which indicate little more than the fact that the half-tone block is a very unsatisfactory method of reproducing drawings of sections.

The coloured plates at the commencement of the volume are not so good as the matter. The success of the first edition has evidently had a bad effect on the stones, for the impressions show a marked falling off.

It is stated on the title-page that Mr Morris is Surgeon to the Skin Department of St Mary's Hospital, London, Corresponding Member of the K. K. Gesellschaft der Aertzte in Wien, of the Wiener Dermatologische Gesellschaft, and of the Société Française de Dermatologie; may we add that he is also Fellow Collegii Regii Chirurgorum Edinensium.

The Tallerman Treatment by Superheated Dry Air in Rheumatism, Gout, Rheumatic Arthritis, Stiff and Painful Joints, Sciatica and other affections. Edited by ARTHUR SHADWELL, M.A., M.B. 8vo, pp. 173, with 63 illustrations. London: Baillière, Tindall & Cox. 1898. Price 3s. 6d.

IT is some five years since the Tallerman method of treatment by dry heat was introduced to the profession, and since then it has undergone a fairly extensive trial. The present volume consists for the most part of a collection of cases in which the treatment has been carried out — cases which vary from rheumatoid arthritis to chorea and ulcers. The best results appear to have been got in arthritis deformans and the different forms of rheumatic and gouty affections. The results are well illustrated by photographs taken before and after treatment. The book does not, we conclude, pretend to be anything more

than an extended advertisement, and as such it will no doubt fulfil its object in bringing the treatment, which is undoubtedly of value, under the notice of the profession and the public. The ethics of the position of a physician as editor of such a volume seems to us a matter of some dubiety, but if a future edition should be required, the editor might well make use of his position to improve the grammar and literary style in which some of the cases are presented.

Vade Mecum of Ophthalmological Therapeutics. By Dr LANDOLT, Paris, and Dr GYGAX, Milwaukee. 12mo, 138 pp. London and Philadelphia: J. B. Lippincott Company. 1898. Price 3s. 6d.

THE object of this little work is to put into the hands of the profession a vade mecum, containing in a concise form the indispensable facts of special therapeutics. The headings are printed in bold type, and are conveniently arranged in alphabetical order, which obviates the trouble of referring to an index.

The book supplies a much-felt want, and is well worthy of careful perusal.

Abstracts from Recent Literature

NEUROLOGY

FAMILY PERIODIC PARALYSIS (E. W. Taylor, *Journ. of Nerv. and Ment. Disease*, Sept. and Oct. 1898).—The affection, to which the purely descriptive name of "Family Periodic Paralysis" or "Periodic Limb Palsy" has been applied, is rare and has been studied hitherto mainly by German writers (Westphal, Oppenheim, Goldflam, etc.). It seems scarcely to have been recognised at all by writers in this country; on this account, and also because it has an extraordinarily well-defined symptomatology, while its pathology and ætiology are very obscure, we think it may be of interest to give a somewhat detailed digest of Taylor's excellent paper, which records several original cases, and gives an abstract of cases hitherto recorded.

Typically, the affection is characterised by periodic attacks of extensive, flaccid, motor paralysis, with great diminution or absolute loss of reflex and electrical excitability, without sensory

or psychical disturbance of any sort, and with intervals of practically perfect health.

Its rarity is shown by the fact that Taylor has found only fifty-three undoubted cases in literature, including his own; not one of these cases is recorded by an English writer. The family character of the affection seems clear from the fact that thirty-five of these cases occurred in three families—a few of the other cases being sporadic. The transmission is usually direct, and may be through both male and female lines; as a rule, there is no other neurotic tendency in the family.

The affection generally begins in youth or about the developmental period—between ten and twenty, as a rule—and shows no preference for either sex. Except in a few cases, there have been no prodromata to an attack; occasionally sweating, thirst, etc., have been noted. A striking fact is that the attack almost invariably comes on at night, the patient wakening to find himself paralysed. The paralysis, which is always flaccid, usually affects the legs first and most severely, then the body, arms and neck; the cranial nerves are nearly always free, but the facial nerves have sometimes been more slightly affected and in one case the motor part of the trigeminal nerves; coughing and sneezing are often impossible and the respiration is at times superficial. As a general rule, there is not the slightest involvement of sensation, subjective or objective; only in a few cases have vague sensory disturbances, mainly subjective, been described. The mind is always unaffected.

Next to the motor paralysis, the most striking feature of an attack is the state of the reflexes and of the electrical excitability. The reflexes are lost in the paralyzed parts; thus, the kneejerks are constantly lost and the plantars usually so. During an attack, there is diminution or absolute loss of electrical excitability both in nerve and muscle, the amount of diminution seeming to depend on the completeness of the paralysis; reactions of degeneration have not been found. The mechanical irritability, also, of muscle and nerve is often totally lost during an attack, but returns somewhat before the electrical excitability (Goldflam).

In one case Oppenheim found, during an attack, dilatation of the heart with symptoms of mitral insufficiency, while the heart was quite normal between the attacks: this was found also by Hirsch. The rectal and vesical functions are usually normal; in one case (Westphal) a desire to micturate was a preliminary symptom, with temporary inability to do so, and in another case (Taylor) the desire to pass urine or fæces was abolished during the attack, even if it lasted thirty-six hours.

Usually an attack begins gradually, taking several hours or even days to reach the height of the paralysis; then, after a

varying time, it gradually abates—the order of the return of power being usually the inverse of the onset. Sudden loss of power and sudden recovery are exceedingly rare. The length of an attack varies considerably, but is generally from ten to forty-eight hours; thus it is common for the patient to have an attack during the night and it lasts till noon or evening of next day. The frequency of the attacks also varies greatly; may be daily, weekly or yearly.

Between the attacks, the patient is as a rule quite normal. Oppenheim, however, found in his case slight atrophy of the hand muscles and, later, weakness of the legs associated with constant defect in electrical reactions: Goldflam alone has found qualitative, as well as quantitative electrical changes—partial reactions of degeneration: Taylor found apparently increased skin resistance and defective electrical reaction in the right peroneal group of muscles: while in cases recorded by Bernhardt, which Taylor considers doubtful examples of this affection, there were pronounced muscle changes, which B. regarded as allied to the muscular dystrophies.

With regard to the course of the affection, the general belief seems to be that the attacks continue unchanged as regards severity and frequency through life; in all Taylor's cases, however, the attacks have tended to grow less with advancing years, and finally to disappear entirely between forty and fifty. All drugs, including quinine, have been found useless in undoubted cases.

As there has never been an autopsy, few facts are known as to the pathological anatomy. No changes have been found either between or during the attacks in the spleen or any other internal organ except temporary dilatation of the heart during an attack (Oppenheim, Hirsch). Slight muscular atrophy or more pronounced muscular changes have been described (Oppenheim, Bernhardt). Oppenheim and Westphal excised pieces of muscle and found certain changes, *e.g.* a waxy degeneration, but they are not inclined to attach any pathological importance to this. Goldflam, on the other hand, describes characteristic changes in excised pieces of muscle—hypertrophy of muscle fibres, deposition of a glassy substance between them, and vacuole formation—and regards these as of great importance, and as explaining at least part of the clinical picture, *e.g.*, the persistent electrical anomalies which he found. The blood has been examined in only a few cases, and certain changes have been found; during an attack, leucocytosis with reduced number of eosinophiles, while, between the attacks, lymphocytosis, with a large percentage of basophiles and eosinophiles, and the disappearance of leucocytosis have been noted. Routine examination of urine has in almost all cases shown nothing abnormal. In one of

Taylor's cases the quantity of urine and the excretion of urea were diminished in the intervals. In some cases Goldflam found albumen during an attack; the toxicity of the urine seemed greater during an attack than in the interval, and certain toxic substances were isolated, which, when injected into a rabbit, killed it, but without any of the symptoms of periodic paralysis as seen in man.

As regards the ætiology, there is little definitely known. A few cases, which are doubtful examples of the affection (Taylor), from the association of the attacks with malaria, and the curative effects of quinine, led several of the earlier writers to bring the affection into causal relationship with malaria. But none of the undoubted cases of family periodic paralysis seem to have had anything in common with malaria except the periodicity. Apart from the marked hereditary predisposition, which is seen in so many cases, the most striking ætiological fact is that the attacks almost invariably occur at night, and often after a day of exceptional muscular exertion, followed by rest; in one of Taylor's cases and in others it was noted that they never came on as long as the muscular exertion lasted, and further, that they could be temporarily postponed by continuing the exercise. It is possible that the absence of this alternation of exercise and rest may explain why, even in the worst cases of the paralysis, such remarkable immunity is shown, in the vast majority of cases, by the heart and respiratory muscles.

The facts known as to the pathological anatomy and ætiology help us but little to arrive at the pathology of this interesting affection. Goldflam's observations with regard to the toxicity of the urine are noteworthy, and further investigations in this line are desirable. Goldflam and Bernhardt are of opinion that the affection should be classed with the muscular dystrophies, mainly because Goldflam claims to have demonstrated characteristic changes in the muscles. Evidently, however, even if this were true, it would not explain the essential feature of the affection, viz., the periodic attacks of paralysis; this is quite foreign to all kinds of muscular dystrophy. Taylor is inclined to think the analogy with congenital myotonias is "more interesting and instructive," and we agree with him. Both affections are the expression of a disorder in the functions of muscles; approximately the same muscle groups are affected; in both cases the disorder does not manifest itself till after a period of rest, usually following considerable exertion, and in both the disorder is seen, as a rule, only after years of apparently normal muscular action; they have ætiological factors in common, *e.g.* each is mainly a family disease, but with isolated cases, in which no hereditary predisposition can be traced, and each seems to occur much more often in Germany than in France

or Britain; from the point of view of pathological anatomy, hypertrophy of the muscular fibres has been found in both. While, however, in myotonia congenita the disorder in the functional activity is shown by a tonic spasm, the disorder in family periodic paralysis is shown by paralysis; a family affection, described by Eulenburg as paramyotonia congenita, in which tonic spasm—usually excited by cold—was followed by weakness, seems, in a manner, to combine both. *The* characteristic feature of family periodic paralysis, however, seems to have no analogy in the congenital myotonias, viz., the fact that the periodic attacks, with so marked motor, reflex, and electrical changes, have *practically normal intervals*; in the myotonias, on the other hand, all the phenomena (*e.g.* the characteristic myotonic reactions) remain constant except the tonic spasm.

There is nothing but hypothesis as to the site and nature of the process which produces these periodic attacks. Periodic disturbances of circulation in the cord (Westphal), in the periphery (Oppenheim) have been suggested. "We may certainly limit it to the spinal motor neuron and its associated muscles" (Taylor). As to the exciting cause of the disturbance, the most generally accepted hypothesis is that it is due to auto-intoxication—in certain individuals or certain families with some peculiarity in certain stages of metabolism a poison is generated within the system, whose action paralyses motor nerves and muscles, and whose activity depends on exercise followed by rest. The source and nature of the poison are quite obscure.

If this hypothesis is correct, the fact that continued muscular exercise in some cases postponed the onset of the attack, seems to us to indicate that the poison, being neutralised by the products of muscular activity, was probably of an alkaline character. In this connection, it is interesting to remember that similar tonic spasms to those of myotonia congenita were produced experimentally in frogs by certain salts, *e.g.* sodium phosphate, even after paralysis of the intra-muscular nerve endings by curara (Ringer and Sainsbury).

CHANGES IN NERVE CELLS AFTER REPOSE, ACTIVITY, OR FATIGUE.—Lugaro details the experiments he performed and the results which these give, in the August number of the *Rivista di pathologia nervosa e mentale*. He exposed the carotid artery in a dog, and while the nerve cells in the brain were in an excited state as a result of this operation, he injected into the vessel Cox's fixing liquid. The nerve cells were thus rapidly excited and fixed at the same time. Other dogs were placed under the influence of chloral, ether, chloroform, or morphia, and the nerve cells fixed as before. The preparations made by Golgi's method show—(1) in every case, absence of

great changes in connection with the cell body and its large branches; (2) the presence of delicate uniform or varicose prolongations in small numbers and diffusely scattered, in dogs killed during the awakened state by injections of the fixing solution, and in dogs under the influence of morphia; (3) the rarity or complete absence of spinous appendages on the protoplasmic branches of animals killed during the awakened state; (4) the presence of slight varicosities covered with spines in dogs morphinised; (5) the almost complete absence of varicosities and the presence of a luxuriant growth of spiny appendages upon the rootlets of dogs killed during profound narcosis produced by chloroform, ether, or chloral.

The three morphological conditions of the fine rootlets (smooth rootlets, spinous rootlets, varicose rootlets with or without spines) may be interpreted in the following way: *the retraction of spines* appears to be clearly related to a state of physiological activity. One meets with it in animals in the waking condition, who, by the introduction of the fixing fluid, undergo a direct excitement of the cortex, an excitement shown by the violent muscular contractions which the injection provokes. The retraction of the spines may be also seen in preparations obtained from dogs extremely excited by the action of morphia.

Varicosities appear to be consecutive to a prolonged state of excitement. The author has noticed them chiefly in the preparations from dogs which have been under the influence of morphia for long. The production of small varicosities on the branchings do not correspond to the immediate reaction due to excitement, but to a state of fatigue. In large doses morphine is a marked cerebral excitant to dogs. In animals under profound narcosis due to chloroform, ether, or chloral, these varicosities are completely absent.

The protoplasmic rootlets have a regular contour and are richly *provided with spiny processes.* If retraction of spines be a sign of activity; if varicosities on the fine branching ramifications be an expression of fatigue, then retraction and varicosities are absent in the repose due to profound narcosis, and on the contrary the spines attain a high degree of expansion. Consequently, the regular dendritic branching, without varicosities and richly provided with spiny processes, is found in repose. Regular ramification, without either varicosities or spines, corresponds to a state of activity. A branching showing slight varicosity, with or without spines, corresponds to a state of fatigue.

MEDICINE

THE TREATMENT OF ASTHMA.—Van Noorden (*Wien. med. Woch.*, Oct. 16th, 1898) directs attention to a drug—atropine—which has somewhat fallen into disuse in the treatment of asthma. He has employed it regularly for the past four and a half years, and has only found it fail in cases complicated by secondary bronchitis and emphysema. Its action differs from that of other drugs in that it persists after administration is stopped; and also in that it is useless so far as any immediate effect in cutting short a paroxysm is concerned. He orders $\frac{1}{600}$ gr. (·5 mgr.) of atropine in divided doses daily, and increases the amount by ·5 mgr. every third or fourth day until $\frac{1}{100}$ gr. (4 mgr.) is being taken. The treatment is then suspended, but should be renewed in the course of six months or so. Van Noorden finds that even with the maximum dose toleration is established and no unpleasant results ensue.

MELANOPLAKIA OF THE MUCOUS MEMBRANE OF THE MOUTH, AND THE DIAGNOSIS OF ADDISON'S DISEASE (by Prof. Fr. Schultze, *Deut. med. Woch.*, 17th Nov. 1898).—All who have had much practical experience must admit the difficulties in deciding as to a diagnosis of Addison's disease, and must realise the importance of pigmentary deposits in the mouth. The latter alone are often made responsible for such a diagnosis; it is, however, certain that they may occur quite independently. Schmitz, at Schultze's instigation, found, on examining a comparatively small number of patients, that some of them had small punctiform or linear pigmentations on the hard and soft palate, with no further indications of Addison's disease. Such deposits occur frequently in certain chronic affections, such as cancer, — especially that of the stomach. A case of this sort is related by Schultze, but as there was no autopsy he rightly admits the possibility of a secondary growth in the supra-renals.

He next relates a case of recurrent ascites, in which the soft palate had well-marked spots of a dark-brown colour; other parts of the mouth too, showed similar pigmentation, while the skin was nearly free. The pigmentation did not increase during the seventeen months of treatment, and the patient's general condition improved. It is possible that there was here an affection of the supra-renals, or of the abdominal ganglia, which might have developed in connection with a chronic peritonitis, —probably tubercular,—but the absence of distinct Addisonian symptoms was clear enough. The question of hepatic cirrhosis must also be kept in view.

Another case is given in which the diagnosis is still more

uncertain; the skin was yellowish-brown but without icterus, or a true bronzing; a number of yellowish-brown pigment-spots of considerable size were present in the mucous membrane of the gum, and the inside of the cheek at the same level. There were attacks of gall-stone colic, and also evidence of tubercular disease in one testicle, with a suspicious condition of one lung. As, however, there was an absence of increasing weakness, and of gastro-intestinal disturbances, the diagnosis of Addison's disease was considered doubtful.

The presence then of pigmentation in the oral mucous membrane is clearly not so very rare, and is not sufficient to determine the diagnosis of Addison's disease, even when at the same time the skin is brownish from some obscure cause. Addison's disease from the clinical point of view is a complex of symptoms, consisting in bronzing of the skin and certain mucous membranes, anæmia, progressing weakness, and gastro-intestinal disturbances. The discoloration must be produced by no other well-known cause, such as jaundice, eczema, arsenic. Some are inclined to dispense with the pigmentation as an essential, v. Kahlden being the most prominent of these, but Schultze relates a case in which there were present adynamia, anorexia, anæmia, vomiting and diarrhœa, steadily becoming worse to the end, but without any *post-mortem* affection of supra-renals, ganglia, or intestinal nerves. All that was found was chronic gastritis, follicular ulcers in the large bowel, and enlarged spleen.

Most of the rest of the paper is taken up with a reply to certain criticisms by v. Kahlden, of a case from Schultze's clinic studied by Brauer. From it the opinion is formulated that cases of Addison's disease may occur, in which no microscopical changes can be demonstrated by our present methods in the supra-renal bodies. This, of course, leaves entirely untouched the question as to how far an abnormal function of those organs can produce the symptoms of Addison's disease, a question which, it need hardly be said, is as yet purely theoretical.

ALBUMINURIA: CONSIDERATIONS SUGGESTED BY 1248 EXAMINATIONS IN NON-RENAL CASES.—Dr A. K. Stone gives a resumé of his examination of the urine in a large number of cases (*Boston Med. and Surg. Journal*, Sept. 22nd, 1898). He thinks that there is no better test for albumin in the urine than heat and nitric acid. The weight of authority at present appears to be that every case of albuminuria indicates a pathological condition, and that under strictly normal conditions albumin is absent from the urine.

The author's observations were made on 1248 women, and he excluded every case of nephritis or cardiac case which

showed venous stasis, as also any case where well-marked degeneration of any organ was present. The total number of times that albumin was found in the urine was 298 or 23·08 per cent. The highest percentage was found in early life, when the so-called transitory albuminurias are most apt to occur. From the ages of twenty to fifty the figures are practically the same (22+per cent.), but at the age of fifty a distinct rise in the number of cases occurs (26+per cent.), as would be expected from the beginning of senile changes.

The importance of the consideration of these cases lies in the small number of patients found where albuminuria was a symptom. The patients were distinctly not well, and yet but 23 per cent. showed albumin. Neither alcohol, excessive exercise nor excessive feeding could have had any influence in determining the results in these cases. A large number of these albuminurias were found to suffer from the transitory form.

The author considers that those cases which show persistent slight albuminuria are less tractable to general and hygienic treatment than those not having this symptom. Albuminuria which shows no indication of renal disease *per se* is yet a distinct danger-signal and points to the necessity of a careful clinical examination of the other systems. Dr Stone thinks that a careful examination of the circulatory and digestive systems gives a much clearer insight into the conditions of the case than exact knowledge regarding minute microscopic or chemical changes in a single specimen of urine.

ON THE FORMS AND STAGES OF SYPHILIS.—Adami (*Montreal Medical Journal*, June 1898) pleads against the too rigid separation of the different stages of syphilis. He believes that in certain cases there may be absence of the primary cutaneous manifestations of syphilis; that individuals may fail to present recognisable primary or tertiary symptoms; and that in persons relatively insusceptible to the disease the affection may be limited to the primary cutaneous lesion. As regards the relation of the secondary and tertiary stages, the frequency with which the internal organs are affected in the early period of generalization of the disease is too much left out of account. The reason why tertiary and secondary syphilis are looked upon as so widely distinct is that the disease is too rarely fatal in the secondary stage to afford many opportunities for the study of the early visceral changes. The identity of the lesion is, however, shown by a study of hepatic syphilis. In congenital syphilis we find miliary gummata and pericellular fibrosis—appearances similar to those of tertiary syphilis. In rare cases we have extreme fibroid change with little evidence of gummatous formation. We may also find in the liver of a con-

genitally syphilitic child well-defined gummata. The relation between miliary and caseous gummata is identical with that between miliary tubercles and encapsuled tubercular caseous masses. In the hepatic disorders of acquired syphilis icterus is the earliest manifestation; it is probably due to a catarrhal hepatitis, which may lead to a generalized fibroid change. In the gummatous syphilitic liver, we often also find a pericellular fibrosis. The only lesions peculiar to acquired, as opposed to congenital, syphilis are perihepatitis and the occurrence of sharply defined tumour-like outgrowths on the surface of the liver.

SURGERY

RESECTION OF THE RECTUM BY A SACRO-ABDOMINAL OPERATION (Depage of Brussels, *Annales de la Société Belge de Chirurgie*, 15th November 1898).—The writer of this paper has collected as many cases as he can find in which the rectum has been removed by the combined abdomino-perineal or abdomino-sacral routes, with a view to obtaining evidence as to the value of this comparatively new procedure.

It appears that Czerny was the first to use this method. In 1883, while attempting to remove a tumour by the perineal route, he found it impossible to get it away until after he had opened the abdomen in the middle line. The patient died twelve hours after.

Gaudier next used it for the removal of a tumour which extended 8 c.m. above the anus. With the patient in the Trendelenburg position he opened in the middle line, and divided the sigmoid flexure between two ligatures. The lower portion of the gut, 18 c.m. in length, was then removed through the perineal route without sacrifice of any bone. Chalot performed an operation in almost identically the same way some days later; and Boeckel, Giordano, Reverdin, and Berger have reported similar cases.

In June 1898 Quenu described the steps of an operation, which he has now performed on four occasions, whereby he (1) opens the abdomen in the middle line and ligatures the two hypogastric arteries; (2) frees the sigmoid flexure and makes an artificial anus in the left iliac region, after dividing the bowel between two ligatures, and antisepticising the divided ends; (3) the rectum is then separated behind as far as the point of the sacrum, and the recto-vesical pouch is opened; and (4) the gut is removed through the perineum in the usual way.

Later Depage and Van Itterson have each reported operations after this principle. There are thus fourteen reported cases, with nine recoveries and five deaths, but it is to be noted

that the cases last operated upon have been much more successful than the earlier ones, doubtless, as the writer suggests, because of extended experience and improvements in technique.

THE PRESENT STATE OF RENAL SURGERY (by L. Bazet, M.D., San Francisco, *Philadelphia Medical Journal*, Oct. 22nd, 1898).—In reviewing the recent advances in, and the present state of renal surgery, the writer is satisfied that our methods of diagnosis are sufficiently accurate to enable us to make certain of the existence and nature of most renal affections. It is, however, less easy to satisfy oneself of the condition of the other kidney in view of the possibility of the suspected organ being removed by nephrectomy. There is no means of determining with certainty the physiological integrity of the presumably healthy kidney save by catheterisation of the ureter, a practice which the writer considers indispensable for any surgeon engaged in this work. Various cystoscopes have been devised to facilitate this manœuvre, but, except in the female, it is still a difficult and delicate procedure.

The surgical treatment of renal affections is discussed under the following headings:—

1. *Renal Lithiasis.*—A diagnosis of stone in the kidney having been made, nothing is to be gained by delaying its removal. The earlier it is done the less is the natural structure of the organ altered and the less risk is there of septic infection. Operation may be called for in one of three conditions:—

(*a*) *For a calculus in an otherwise healthy kidney*, which is the ideal condition for surgical interference. The kidney, having been exposed through an oblique lumbar incision, is brought out, and its vessels are grasped between the finger and thumb of one hand, while an incision is made along the convex borders of the organ. In this way the hæmorrhage is easily controlled. The writer does not rely upon either palpation or acupuncture in locating the stone. After removing the calculus with the forceps, a few strong catgut sutures are passed through the kidney substance and are sufficient to stop bleeding and secure coaptation. Drainage of the pelvis is to be avoided.

The re-formation of concretions is liable to occur and can only be avoided by rigid attention to diet and general hygiene.

(*b*) *For calculus in a diseased kidney.*—So long as the kidney remains aseptic the effects of a calculus remaining in it for a long time will be either *sclerosis* or true atrophy, or *hydronephrosis*. In the former case the atrophied organ is useless for purposes of excretion and should be removed by nephrectomy. When hydronephrosis has resulted, the kidney, although thinned and dis-

tended, is functionating and should be saved, the stone being removed by nephrotomy. It is only when the kidney substance is completely destroyed and the organ converted into a large sac that nephrectomy is indicated.

When septic infection complicates the condition the writer thinks that nephrotomy is indicated in all cases, with a view to removing the foreign body and draining the suppurating pocket in which it lay. Guyon adheres exclusively to nephrotomy in these cases; but Israel prefers nephrectomy.

(*c*) *For anuria.*—Legueu has shown that anuria may result from the obliteration of one ureter by a calculus. He also states that if the other kidney ceases its function it is not by virtue of a reflex, but because it is already diseased or suppressed in its function. If this be so, it is obviously imperative that the obstructing calculus be removed. This is easy when it is impacted at the upper end of the ureter, but very difficult if further down. Legueu has operated successfully on three patients by splitting the kidney and then pushing the stone up out of the ureter into the pelvis and so removing it.

2. *Nephrorraphy.*—From indiscriminate operation in cases of floating kidney this procedure has given unsatisfactory results. The writer thinks there are two classes of patients who suffer from floating kidney—first, a class—mostly women—in whom the floating kidney is but a part of a complex condition, in which enteroptosis and neurasthenia appear to play the principal rôle. In these the operation is useless.

In the other class the kidney is the only unduly movable organ, and the symptoms are "in itself and of itself." There is no general nervous disturbance. It is in this class of cases that nephrorraphy is of benefit.

3. *Hydronephrosis.*—This being an aseptic dilatation of the pelvis of the kidney due to an obstruction of the ureter, will be treated by removing the cause of that obstruction. When this is a calculus nephro-lithotomy is the appropriate operation; when a kink due to a movable kidney—nephrorraphy. Difficulties arise, however, when a stricture of the tube is the cause. Dilatation by bougies is impracticable. Excision of the stricture with implantation of the lower end of the ureter into the pelvis of the kidney has as yet been performed in too few cases to furnish evidence of its value. The only other alternative is nephrectomy, which is called for chiefly where the hydronephrosis is enormous and the kidney substance much destroyed. The writer prefers the transperitoneal route.

4. *Renal Neoplasms.*—Simple tumours of the kidney are so seldom met with, that it is unnecessary to discuss their treatment in detail. Wide ablation of the tumour, or partial nephrectomy, are the operations most frequently indicated.

For sarcomata and epitheliomata, however, the only operation possible is nephrectomy, and although the immediate results are eminently satisfactory, recurrence takes place in from seventy-five to eighty per cent. within six months of the operation. The writer doubts if the risk of the operation is compensated for by the prospect of prolonged life, especially in cases where the tumour has passed the limits of the kidney substance. He points out that varicocele is a common symptom in large renal tumours, and that it is caused by the pressure of large glands upon the renal vein. This symptom, then, he considers as contra-indicating operation. "When the tumour is palpable," he says, "it is already too late for operation."

5. *Tuberculosis of the Kidney.*—In considering the advisability of operating for tubercular kidney, two important points arise:—(1) what other tubercular lesions, if any, exist? and (2) is the disease confined to one kidney? Accompanying or consecutive lesions must be duly weighed, and their bearing upon the operation considered.

When both kidneys are diseased, nephrectomy of course is out of the question, and the only alternative is to incise and drain the worse kidney with a view to diminishing the amount of toxine absorbed and the risk of secondary infection. The fistula seldom closes, and the benefit is only temporary, but it relieves the patient and prolongs his life. When the disease is unilateral, especially if primary in the kidney, and if attacked early, the prognosis is very good. The co-existence of tubercular cystitis is not a contra-indication, as this often clears up after the kidney is removed. Unfortunately the symptoms are so insidious in the early stages that it is seldom possible to interfere sufficiently soon to obtain the best results.

6. *Renal Infections.*—Cases of surgical pyelonephritis belong to one of two classes, (1) those with, and (2) those without distension. When there is *distension*, and the disease is bilateral, nephrotomy appears to the writer to be the only operation—although in many cases it leaves a permanent fistula. There is at once a diminution of the fever and a general improvement in the health of the patient, which outweighs the risk of a fistula.

When the distension is unilateral, nephrectomy offers the best hope of recovery. The increased risk of this operation depends on the state of the other kidney and not on the greater severity of the operation.

When there is pyelonephrosis *without distension*, the ideal treatment would be ureteral catheterisation and washing out the pelvis, but this is too difficult a procedure to be of universal application. As the disease is oftenest bilateral, nephrectomy is excluded, and the only other alternative is nephrotomy.

7. Post-operative Fistulæ.—When the fistula persists because of obliteration of the ureter, unless this can be dilated by retrograde catheterisation, nephrectomy is the only feasible operation.

When continued suppuration in the kidney is the cause of the fistula remaining open, also nephrectomy offers the best hope of a cure—but the shock of secondary operations is considerable, and the cases for this procedure must be carefully selected.

In conclusion, the writer expresses the opinion that the future of renal surgery will largely depend on the success with which the ureter is brought within the domain of the surgeon.

DERMATOLOGY

NEW TREATMENT OF ACNE ROSACEA.—Dr Bayet of Brussels states that he has had great success in treating cases of this affection by the following method (*Gaz. Hebd. de Med. et de Chirurg.*, 12th June 1898). He notes that the usual statement regarding abuse of alcohol producing this affection is far from being justified. Many so afflicted never exceed moderation or are total abstainers. The recognised methods of treatment range themselves in two classes.

1. Purely medical means, consisting in the application of irritating substances, which lead to the production of slight inflammation. Such substances are sulphur, ichthyol, corrosive sublimate, &c.

2. Surgical measures; which are the most effectual. *Electrolysis* is useful. It is carried out by introducing a fine platinum needle into a vessel and passing a current of from 3 to 5 milliampères for a few minutes. Thrombosis takes place in the vessel, and if it has no anastomoses it disappears soon.

Scarification made with a fine knife is a proceeding more frequently adopted. Each of the small vessels is divided, and thrombosis taking place in the cut ends, they disappear. It requires frequently to be repeated, and fresh vessels often arise during the treatment.

The new proceeding which is advocated has, in Dr Bayet's hands, given results much superior to these and much more rapid. The apparatus consists of a metal disc 1 centimetre in size, carrying forty fine bent gold points. This disc is fixed upon a rod which in turn is joined to a very solid base. It is driven by a small dynamo, and the movement of the disc is a rapid oscillation. The points are applied to the part of the skin affected, and the depth which they penetrate is easily regulated. In this way, in a few minutes a multitude of small punctures are made dividing all the vessels of the skin. After the

hæmorrhage ceases, an ointment (devised by Lassar) is applied, and consisting of—

Naphthol β,		10 gr.
Precipitated sulphur,		50 gr.
Vaseline,	} aa.	20 gr.
Green soap,	}	

After the application of this ointment pain is felt in from ten to fifteen minutes, when it is removed and the surface cleaned. An unirritating powder is now applied. The skin desquamates in a few days. After an interval of eight days the same proceeding is adopted, and after four or five such applications a cure results.

ECZEMA, A PARASITIC DISEASE.—Dr Lereddo has written a small work to prove that eczema is in its nature parasitic. He states that in acute eczema the vesicles always contain parasites (morococci of Unna), and that cultures of these can be inoculated and reproduce acute eczema. Every solution of continuity in the skin may be the starting-point of an eczema. That if it starts, auto-inoculation of neighbouring or distant parts is easy. It is even in some cases contagious. The morococcus of Unna is found most frequently alone or associated with other microbes in the vesicles of acute or chronic eczema. It is a coccus of variable size, and its growth seems to be favoured by lesions which alter the trophic condition of the skin (as varicose conditions). Dermatitis, artificially produced, as by the use of cosmetics or medicaments, may give rise to conditions predisposing to an outbreak of eczema, as may also certain diatheses (gout, diabetes), nervous affections or affections of the digestive organs.

The author traces the relation between eczema and other skin affections, and shows that nutritive, gastric or urinary troubles play a very important part in the pathogenesis of eczema which is very often only a later manifestation of these diseases. It would appear that eczema is only a secondary affection due to more general causes. (*L'Eczéma, maladie parasitaire:* Paris, 1898. Masson et Cie.)

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THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

ON MOVABLE KIDNEY[1]

By DAVID WALLACE, F.R.C.S.Ed.,
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MOVABLE kidney is the term used to designate a kidney which moves externally to the peritoneum through a greater area than the kidney does normally. It is a relative term, as the kidney normally moves to some extent during respiration. In thin persons with lax abdominal walls the kidney can be felt to move, but its movement can be best estimated in those cases where, for purposes of treatment, the operation of nephrotomy has been performed. We then find that the kidney moves down with inspiration and upwards with expiration, while it is tilted forwards on an antero-posterior axis.

The condition of movable kidney, in the sense referred to, has been known as an abnormal condition for many years—the first reference to it being as far back as 1581, while its clinical importance was set forth by Riolau in 1649. King in 1836 attempted to excise a movable kidney but failed to find it after opening the abdomen. We may take it however, that, in spite of such early pioneers in this branch of surgery, the importance and significance of movable kidney were not recognised until much later—not until 1860, and indeed for twenty years after that date little was done from the clinical standpoint. Prior to 1880 Keppler, who believed the condition to be dangerous to life, advocated excision of the kidney, but this heroic procedure was adversely criticised, and when in April 1881

[1] Read at the February meeting of the Edinburgh Medico-Chirurgical Society.

Hahn of Berlin proposed, and carried out, stitching of the organ to the posterior wall of the abdomen, excision was discarded, and nephrorraphy or nephropexy, as it is now termed, took its place.

The subject up to 1881 is very thoroughly discussed by Landau in a monograph which appears in vol. 110 of the New Sydenham Society. It is still further brought up to date by Dr Newman of Glasgow in his work "Diseases of the Kidney," 1888; and in all its bearings, except operative, it is in the most complete manner considered by Dr Fischer of Vienna in the *Centralblatt fur die Grenzgebiete der Medizin und Chirurgie*, 1898. Dr Fischer further gives a most elaborate bibliography of the subject at the end of his paper. In consideration of these works being readily accessible it is unnecessary for me to occupy your time by a discussion of the statistics, etiology and symptomatology of movable kidney, but I propose to bring before you some points which have been more recently advanced regarding the etiology, and to illustrate the subject from cases which have been under my personal observation and care.

As regards the frequency with which mobility occurs, I believe *post-mortem* statistics are fallacious, as the kidney is much more fixed after death than during life. Clinically the condition is not uncommon, although at the present time authors, I think, rather exaggerate its frequency. It occurs more frequently in women than in men, the proportion usually being given as 10 to 1. The right kidney is more frequently affected than the left, the proportion here being also 10 to 1. Why this should be no satisfactory explanation has been given in my opinion, and indeed the causes assigned for the mobility seem to me erroneous and inadequate. It is said to occur chiefly in those women of the poorer class who have borne many children at short intervals, and who have been unable to stay in bed for a sufficient length of time after parturition. Greig Smith says, "a considerable proportion occur in the upper classes, and most of these have been addicted to violent exercises—riding, tennis and gymnastics. Of those that come under the observation of the surgeon for treatment, most are to be found in this class." This coincides with my own experience. Of 14 cases requiring treatment 13 were females, and of these 7 were nulliparous, and only 1 of the others had borne several children and belonged to the poorer class. In a recent paper, January 1899, *Annals*

of Surgery, Dr A. B. Johnson gives expression to a similar opinion and quotes cases treated in the Roosevelt Hospital, New York, to bear it out.

Then again it is stated that loss of fat predisposes to the condition, but I am inclined to agree with Senator that loss of fat may merely render the condition more easy of detection, and I am sure that in some cases, those in which gastro-intestinal symptoms and neurasthenia are present, the emaciation is a result not a cause. So too I think the view that mobility is most common in multiparæ may be due to a similar fallacy, viz., that the abdominal wall in such women is more lax, and the kidney therefore is more easily palpable than in nulliparæ. I believe of one thing we may be satisfied: the condition comes on gradually in the majority of cases and gets progressively worse; while the exact time of its onset is rarely known unless it be due to traumatism. Attention is now being drawn to the occurrence of movable kidney in children, but it is stated that in them it may be readily overlooked, as palpation of the abdomen, except under an anæsthetic, is difficult. Recently Dr Comby has written upon this subject in the *Archives de Médecine des Enfants*, 1898.

Recently much work has been done in reference to the shape of the kidneys. Dr Cunningham of Dublin and others have demonstrated that their shape is not merely that of the ordinary description, but that each is moulded by both the solid and hollow viscera in relation to which they lie, and that the twelfth rib, the psoas muscle and the crus of the diaphragm mould their posterior aspect. The anterior surface is in particular at variance with the usual description—upon it "there is a point of maximum convexity—a place where the kidney substance is raised in the form of a marked prominence or bulging which in the right kidney extends across the anterior surface in the form of a rounded ridge. Above and below this eminence the anterior surface falls away towards each extremity in the form of an inclined plane of greater or less obliquity. These planes represent the effect of pressure. The superior from the liver, the inferior from the ascending colon. The intervening eminence is the result of this counter-pressure. Frequently the inferior sloping surface presents a high degree of obliquity." The moulding described by anatomists does the invariably present itself, as can be seen *post-mortem* — the

kidney being examined *in situ*—when, in many cases, the kidney has the smooth convex anterior surface described in the older text-books. Further, the moulding when present varies considerably from the above description. Can it—the moulding—be due to *post-mortem* changes from pressure while the body lies on its back? It would be interesting to harden with formaline, as it is now used, the body being in the erect position or lying on its face. Dr Cunningham also alludes to the "clasping" action of the twelfth rib as manifested by the moulding of the kidney posteriorly. Is this also due to the recumbent posture after death, or is the twelfth rib during life an important aid to fixation of the kidney?

Kendal Franks (*Brit. Med. Journ.*, 1895) draws attention to this shape of the kidney and propounds the view that displacement is in great part prevented by it, and suggests that too great mobility occurs when the upward pressure is in some way diminished. He suggests two causes which may give rise to such diminution of pressure. 1st, parturition, 2nd, traumatism; but both of these causes are absent in many patients. Negative pressure, so called, after parturition, if it obtain at all, probably is only present for a few hours. We have an analogous condition after ovariotomy when if a large tumour be removed from the abdomen pseudo-ileus may supervene, but quickly passes off. Laxity of the abdominal wall, after parturition, is another matter, and may diminish the support of the kidney, but *negative* intra-abdominal pressure does not accompany it.

So far as these explanations are concerned I think they still leave us in doubt regarding the cause which initiates movable kidney, and I believe we must seek for the explanation in variation of anatomical relationship and fixation. Perhaps, as Greig Smith indicates, normal mobility may be a source of stability, and abnormal mobility may result from too great original fixation. Why, however, the right kidney should be more liable to the condition than the left, and why it should be more common in women than men, still remain a mystery. I cannot agree that tight lacing and the liver account for these facts, and in any case many instances are on record where tight lacing has not been indulged in, and where the left kidney has been the one affected.

The detection of movable kidney is not as a rule difficult, but occasionally a kidney which is freely movable at one time

is not readily felt at another. Sometimes we can displace the kidney by adopting some such method as Greig Smith recommends, when we fail to get it in the usual way. When palpating the lumbar region for the kidney we may fail to find it because it is lying, at the moment, low down in the iliac fossa —this is a source of error which should be borne in mind. I have in two instances discovered the kidney—which had been previously overlooked—lying in this position: in one of these an error of diagnosis had arisen, the kidney swelling being supposed to be a swelling associated with appendicitis. Another error into which we may be led is the idea that the freely mobile kidney is enlarged—this, I believe, is due to a physical deception, viz., the kidney gliding under the hand seems to be larger than it really is. I have operated where the kidney was supposed to be of large size and found a kidney of normal size and shape. Once we feel the swelling recognition is generally easy, as 1st, it may have the general kidney shape, and we may feel the hilus; 2nd, it slips back into the kidney region; 3rd, the character of its movement is distinctive, "like a cherry stone from between the finger and thumb," as Landau says.

From the clinical standpoint the symptoms associated with mobility may be grouped under four heads. 1st. Simple mobility which gives rise to no symptoms. 2nd. Pain which is in no way characteristic of a renal affection, and is described as a sensation of dragging and aching on the affected side. 3rd. Renal pain distinctive of renal conditions. This may be accompanied by hæmaturia, pyuria or intermittent hydronephrosis, but not necessarily so. 4th. Gastro-intestinal symptoms which may be accompanied by, or end in, neurasthenia. It must be remembered, however, that the symptoms are not always commensurate to the degree of mobility. Some extremely mobile kidneys give rise to no symptoms, while less mobile kidneys may cause most aggravated symptoms.

The affected kidney is usually healthy. Thus in those excised prior to the introduction of nephropexy the majority were perfectly healthy. No doubt in some instances the kidney contains a calculus, or may be the seat of tubercle, or may have changes due to pressure associated with intermittent hydronephrosis, yet in the majority of cases there is no sign of disease. In eight cases upon which I have operated only one exhibited

any abnormal condition, and in that case intermittent hydronephrosis had been present for two years. In that case the kidney pelvis was considerably dilated. In one case in which, after failure (?) by nephropexy, I excised the kidney it was small in size, but apparently quite healthy. [The patient in this case suffered great discomfort, and was practically an invalid; for two years before operation she was never able to be out of doors. After nephropexy she had relief, but gradually her old complaints reasserted themselves, and I thought nephrectomy justifiable and performed that operation rather more than a year from the date of the nephropexy. At the second operation I found the kidney firmly fixed by a broad band of short fibrous tissue, so firm that I required to cut through it with scissors. The patient improved markedly, and is naturally free from pain.] Even in those cases which suffer from symptoms such as we associate with renal affections the kidney is usually healthy. In some calculi have been got, but only in a minority. The symptoms wholly subside as a rule after fixation of the kidney.

The explanation of the gastro-intestinal symptoms given by Kendal Franks seems to be reasonable, and the fact that such aggravated symptoms are recovered from after operation seems to verify his opinion. He points out 1st, that some symptoms are common to both kidneys; 2nd, that some belong exclusively to mobility of the right kidney; and 3rd, that some occur in mobility of the left kidney. In the first category he places the dragging pain, feeling of weight, and neuralgic pains in the loins, fatigue on slight exertion and general debility. In the second group he places those symptoms recognised as "gastric crises," which are in effect gastro-intestinal: indigestion, flatulence, vomiting and pain, which come on about two hours after food. Relief from these may be got by resting in the recumbent posture. The second or descending portion of the duodenum lies in relation to the right kidney and rests partly upon it. It lies behind the peritoneum and is fixed very much as the kidney is. Kendal Franks believes the explanation of such symptoms to be that the kidney gradually drags the duodenum down and, as he observed in one case upon which he operated, produces a kink upon it, so that a temporary condition is induced, very similar in its symptoms to what is found in pyloric stenosis. I do not suppose that the drag on the duodenum is such that in all cases a kink is produced, but from

a lesser degree of displacement similar symptoms though not so extreme may result.

Intermittent hydronephrosis due to movable kidney is not of very frequent occurrence, but when met with the history is fairly definite of a swelling in the lumbar region, usually felt anteriorly, which comes and goes and occasionally attains considerable dimensions. When the swelling is present the kidney is indistinctly felt, and may appear fixed, but when the swelling disappears the kidney is readily felt to be movable. Dr Knight, in a thesis presented for graduation as M.D. to the Aberdeen University in 1893, discusses the subject in detail, and gives a table of 111 cases. Of these, in the first 31 cases quoted—up to the year 1873—only 2 are said to be due to movable kidney. While of the remaining 80—from 1876 to 1893—47 are stated to have been associated with mobility. Of the remaining 33 cases in the majority no cause is given. Fixation of the kidney may get rid of the condition which is probably due to a kink of the ureter, but when the pelvis of the kidney is much dilated and the ureteral opening into it is much changed in position, or when valvular folds form, as described by Mr Henry Morris, further operative measures may be required. In the lecture which deals with this subject, which Mr Morris has recently published in "The Origin and Progress of Renal Surgery," he brings this aspect of the question up to date, and shows that such cases may be cured by ureterotomy, and that nephrectomy which used to be frequently recommended may be dispensed with. Probably the valvular conditions of the ureter, or in the pelvis of the kidney, are in many cases results, not causes, of the hydronephrosis.

In the work by Mr Morris alluded to, statistics of nephropexy from his own cases are given in tabular form, and I may shortly quote these before I refer to those cases of movable kidney which have been under my care. Mr Morris has operated upon 57 cases of movable kidney without a death. In these 9 were males 48 were females. The right kidney was affected in 45 cases. The left in 12. Of these latter 7 occurred in females 5 in males. No history is given indicative of the cause of mobility, but the chief symptoms are shortly stated, and may be divided according to the classification I have given as follows: Pain the chief symptom in 27. Renal symptoms in 14. Gastro-intestinal in 13. Two of the operations were performed on the

same person, both kidneys being affected, so that only one case does not fall under these heads. In it "micturition was very frequent—the right kidney was very mobile and complicated by an abdominal swelling which proved to be a distended gall-bladder." In one case, a left kidney, a mesonephron was found. In this the symptoms were frequent attacks of pain with frequency of micturition, and the urine contained some pus and oxalate of calcium. Mr Morris, in stating his results, claims "that in most the operation has been perfectly satisfactory, and that after nine or ten years he has seen some of the patients whom he has treated by nephropexy with their kidneys as firmly fixed as can be desired, and who have been quite free of their former symptoms since operation."

With regard to treatment of movable kidney, we may consider that three classes of case have to be recognised :—1st. Those in which, as Osler says, no treatment is necessary. The condition is discovered by accident, gives rise to no symptoms, and it is well to say nothing of the existence of the condition to the patient. 2nd. Those that obtain benefit or relief by wearing a pad. Palliative measures succeed short of operation. 3rd. Those in which operation — nephropexy — is necessitated. Let me exemplify this from cases under my own observation.

Mrs V., æt. thirty-one, married, one child. Complaint, appendicitis. Right kidney extremely mobile, but unattended by any symptoms pointing to the kidney, or which can be associated with its mobility. At operation for recurrent appendicitis adhesions and a kink of appendix were found. After recovery no pain or other discomfort was complained of by the patient.

Mrs R., æt. forty-six, married, no children ; and Mrs M., æt. thirty-five, married, two children ; suffered from gastro-intestinal symptoms, but chiefly from a dragging pain in the right side and lassitude. In each case, complete relief was got by the use of an air pad fixed to the corset, and applied only after the kidney was carefully noted to be in its normal position. This is, I think, of the greatest importance in treatment. It would be as futile to wear the pad over the kidney when displaced, as to wear a truss with the contents of a hernia in the sac. I believe the air pad fixed to the corset is the most comfortable form of support, and I have found it efficient when a hard solid pad and belt have

proved worse than useless. The second patient, Mrs M., had been quite unable to wear the hard pad and belt, but got the greatest comfort from the use of the air pad.

In eight patients on whom I have operated, either because palliative measures had failed upon previous trial, or because the patients refused to try any palliative measure when there was the likelihood of operation proving permanently curative, I find that four, three females and one male, belong to the *simple pain* type. The females were all unmarried, and were respectively twenty, twenty-eight, and thirty-seven years of age. There was nothing indicative of a renal condition in any of them, but in all the kidney (right) was readily palpable and very mobile. In two the kidney frequently occupied the iliac fossa, and in one this, I believe, explained how the condition had been overlooked by several observers. The male patient had a movable right kidney brought about by traumatism—a fall from a horse.

Three patients belonged to the *gastro-intestinal* type, and were all aggravated cases. Vomiting of food had led to emaciation, and treatment had proved unavailing to relieve the gastric symptoms. One of these patients was unmarried; the others, although married, had borne no children.

The last of the eight cases was a married woman of the poorer class who had borne several children. Her left kidney was freely movable, and exhibited intermittent hydronephrosis.

The method of operation I have invariably used is to pass three deep sutures of strong catgut (Hartmann's) through the kidney substance; using for this purpose MacEwan's herniotomy needle; and stitch the organ to the posterior abdominal wall as high up as possible. I freely separate and remove the perirenal fat, but I do not scarify or strip the capsule proper. In all firm union has resulted.

It may be asked does malposition, although the kidney be fixed, not give rise to symptoms. I have not found it so, and, to judge from analogy, we would not expect any inconvenience, as in congenital malposition no untoward symptoms are complained of, and the condition, as a rule, is only discovered after death. A paper dealing with this subject by Dr Newman has been recently published in the Glasgow Hospitals Reports for 1898.

CLINICAL LECTURE

THE HÆMORRHAGES OF THE EARLY MONTHS OF PREGNANCY

Delivered in the Glasgow Maternity Hospital

By ROBERT JARDINE, M.D.
Physician to the Hospital

TO-DAY we shall discuss the hæmorrhages of the early months of pregnancy.

When a woman becomes pregnant her monthly menstrual discharge ceases completely, and she should be free from any loss of blood from the uterus until labour occurs. In a few cases, however, menstruation is continued for the first two or three months. During this time the ovum does not entirely fill the uterine cavity, and until it does there is a free space between the deciduæ reflexa and vera from which the discharge may come. In other cases, again, menstruation has been noted as continuous throughout the whole pregnancy, and a very few rare cases have been recorded where women have menstruated only during pregnancy. An explanation of this phenomenon of menstruation during pregnancy is found in some of the cases at least in the fact that there is a double uterus. In the early stages of development the uterus is a double organ, and in rare cases complete fusion does not take place, so that a bicornuate or double uterus persists. Each half has its own ovary and Fallopian tube, and an ovum may develop in one or both of the halves. If one side only becomes impregnated she may continue to menstruate from the other side. If the second should happen to become impregnated several months after the first, there would be a complete cessation of menstruation, and you would have a very interesting condition at labour of the birth of either a mature and a premature child at one time, or of two mature children within a few months of each other. This is an explanation of what is usually described as the condition of superfœtation.

Superfœtation is described as the impregnation of a second ovum in the same uterus some time after the first. Absolute proof of this, so far as I know, has never yet been furnished,

and I do not believe such a condition can arise. In a number of such supposed cases a double uterus has been found, and it is likely all such cases can be thus explained.

Menstruation during pregnancy does not call for any special treatment, but the woman should rest at the times, as there is likely to be a tendency for an abortion or premature labour coming on.

Hæmorrhage from a diseased cervix.—In cancer of the cervix hæmorrhage may occur at any time during pregnancy. Coitus may cause it or the examining finger. There will probably be a foul discharge as well.

Diagnosis.—Per vaginam the cervix will be found to be ulcerated, and probably breaking down. It will bleed easily on touch.

Treatment.—In the early months the best treatment is complete extirpation of the uterus. If the case has gone on to full time, it may be possible to deliver a live child by the natural passages, but in many cases this will be impossible. In the interest of the child a Cæsarean section could be done, and, if the patient would stand it, complete extirpation. The woman's chances would be small, but as her fate is sealed, you would be justified in taking great risks.

Hæmorrhage from wounds of the external genitals.—During pregnancy the external genitals become very vascular. The vagina takes on a dusky hue, and the veins about the vulva are frequently very varicose. An injury to the vulva or vagina may cause very violent hæmorrhage. If the surface is not broken a hæmatoma will form, and it may reach a large size. If there is a wound it may be only a very small one, and yet the hæmorrhage may be most alarming.

Within the last two years we have had two cases. In the first case the woman, a multipara, was about seven months pregnant. While intoxicated she had fallen against the sharp edge of a tub into which she was micturating. She nearly bled to death from a small punctured wound in the vestibule, near the meatus urinarius. The wound was exactly like a leech bite. I had considerable difficulty in securing the bleeding point with a ligature. The second case occurred quite recently, also in a multipara about seven months pregnant. In getting out of bed hurriedly she had fallen astride of the back of a chair. The wound was a much larger one than in the other

case, involving the meatus and extending up into the vestibule. It was stitched with catgut before she was brought to us, and as it was still oozing we plugged the vagina and vulva and put on pressure by means of a large vulvar pad secured with a T bandage. Both cases did well. The first had her child at full time; the second has not yet been delivered.

Treatment.—Secure the point by means of ligatures or stitches. You will find some difficulty in doing this, as there is so little tissue between the symphysis and the mucous membrane. If the meatus is involved, you may have to tie a catheter in. In stitching be careful not to include the urethra.

In a case of hæmatoma apply cold compresses and use absorbents. If it is in the early months it will probably absorb before labour. On the slightest indication of suppuration incise, turn the clot out, and after washing out the cavity plug it thoroughly with iodoform gauze.

Injury to the vagina may be caused by violent coitus, or by something being pushed into it, *e.g.* to induce abortion.

Treatment.—Secure the wound by stitches if possible, or use a firm plug.

Tubal gestation.—In this condition the ovum becomes implanted in some part of the Fallopian tube. All forms of extra-uterine gestation are probably tubal to begin with. An ovarian form has been described, but its occurrence has been denied by Bland Sutton and others.

The subject of tubal gestation is a very wide one, and would require many lectures, but to-day we shall only consider it as a factor in the causation of hæmorrhage in the early months of pregnancy.

The patient may think she is pregnant, and have the early signs of pregnancy, such as amenorrhœa, morning sickness, and enlargement of the breasts, but in many cases she may have no suspicions. Instead of amenorrhœa she may have irregular hæmorrhages. Shreds of membrane, or even a complete cast of the uterus may be expelled. This is a most important indication. The membrane should be submitted to a microscopic examination for decidual cells. If decidual cells are found and no chorionic villi, it will be a case of tubal gestation. If chorionic villi are found, it will show it is an ordinary uterine gestation. Recently I saw an interesting case where a patient expelled a cast of the uterus after a week's amenor-

rhœa. Microscopic examination showed neither decidual cells nor chorionic villi; we were thus able to decide that there had been no pregnancy. Cramp-like abdominal pains are complained of by some of the patients.

If we look at the conditions under which the ovum is developing, we will soon see what is likely to happen. The Fallopian tube, as you know, is a very small tube made up of three layers, viz., mucous, muscular, and peritoneal. The peritoneal layer surrounds two-thirds of the tube only. The ovum quickly grows, and the tube has to expand to allow of this; but it can only expand to a certain extent, and then it must give way. Rupture usually occurs between the fourth and twelfth week. Any sudden exertion may cause it, but it often occurs without this. The rupture may take place through the muscular and serous coats into the abdominal cavity—intra-peritoneal. The hæmorrhage will then be very great, and death may occur very quickly. In other cases the rupture may take place through the lower part of the tube, *i.e.*, through the muscular layer only, and the blood will then be poured out between the layers of the broad ligament—extra-peritoneal. The pressure of the tissues of the ligament will limit the amount. A secondary rupture may take place into the peritoneal cavity, probably with a fatal result.

In the very early stages the hæmorrhage may not be very great, especially when it is into the broad ligament. The ovum is usually destroyed, but in some cases it goes on developing, and may do so to full time, but we cannot take this up to-day.

In a few cases where a small amount of hæmorrhage occurs into the ovum itself it may be destroyed and a fleshy mole be found, just as occurs occasionally in the uterus. This may lie in the tube and ultimately become absorbed, or it may be extruded from the abdominal ostium of the tube—a tubal abortion. The abdominal ostium of the tube usually becomes sealed up by the eighth week, so that a tubal abortion must take place before this. The hæmorrhage may be severe.

Diagnosis.—You may or you may not have any indications of pregnancy. The patient may have irregular hæmorrhages and be passing shreds. Unfortunately few patients are seen before rupture has occurred. If you should be fortunate to see a case, you will find the uterus enlarged, the cervix soft, and a rounded swelling will be felt on one or other side or behind

the uterus. You should be able to make out that it is in the tube and that it is not an enlarged ovary. Very distinct pulsation will be felt through the fornix. If any membrane has been passed, have it examined microscopically for decidual cells. In doubtful cases a scraping of the mucosa may be taken for microscopic examination. Examinations must be done with the utmost care or you may easily rupture the sac.

In a case where rupture has occurred there will be some external hæmorrhage and perhaps a uterine cast passed. The patient will complain of having suddenly been seized with intense abdominal pain and weakness. You will find all the indications of collapse from hæmorrhage out of all proportion to the amount of external bleeding.

A vaginal examination will not reveal much until the blood is clotted and a hæmatocele formed, then a tumour will be felt to one or other side or entirely surrounding the uterus.

If the rupture is intra-peritoneal the bleeding may be so great as to speedily cause death, but often the pelvis is roofed over, as it were, by adhesions which confine the blood and cause the formation of a retro- or peri-uterine hæmatocele. The whole pelvis will be felt to be full. The uterus may be completely surrounded or the mass may lie behind it and push it away forwards. In the extra-peritoneal form the mass will be felt to be in one of the broad ligaments pushing the uterus away towards the other side.

So long as the blood is free in the peritoneal cavity you will not be able to make out much vaginally, but if you had examined before rupture and found a tumour after the rupture you would be unable to feel it.

The diagnosis will have to be made from a threatened and an incomplete abortion and also from the rupture of some other internal organ. The collapsed condition of the patient should at once convince you that it is a much more serious condition than would arise from the small amount of external hæmorrhage. If a cast has been expelled there will be no trace of a fœtus or of chorionic villi, and under the microscope decidual cells will be found. In an ordinary case of threatened or incomplete abortion the uterus will be enlarged but no other swelling should be present. Rupture of an internal viscus such as the stomach or bowel, especially if menstruation be present, will be a very difficult case to decide. In such a case the

uterus will not be enlarged and the signs of pregnancy will be wanting. The former history of the patient will have to be carefully considered. A definite diagnosis may not be possible without an exploratory incision. As an operation will be necessary in a case of rupture of any organ, an absolute diagnosis is not necessary, but it is better to know if possible beforehand.

Treatment.—1st. Before rupture, operate as soon as possible, as rupture may occur at any time. The operation may be done through the vagina. This method is coming more and more into use. The shock is much less, there is no abdominal scar to give trouble afterwards, and drainage is much easier.

2nd. After rupture, abdominal section at once if the condition of the patient will admit of it. The tube must be tied and removed and the peritoneal cavity thoroughly cleared of clot.

If the patient is too collapsed keep her absolutely quiet and stimulate her freely: then operate when she has rallied.

If a hæmatocele has formed you may wait and try to get it absorbed aseptically, but an operation is, I think, preferable. The absorption is a slow, tedious process, and if it should suppurate an operation will be necessary when her condition will be very much against her.

SULPHONAL POISONING [1]

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SULPHONAL is a drug so widely used, and generally taken with so imperfect a comprehension of its peculiar risks, that I have thought it well to publish the following fatal case of poisoning by it, which occurred some time ago, and to make it the text of some general remarks on the subject.

The patient was a man of thirty-nine years of age, who for nearly twenty years had exceeded in the matter of alcohol. He had, indeed, ruined his career by this failing, but his health had never been very seriously affected by it. He had, however, suffered from sleeplessness, for which he had taken

[1] Read before the Medico-Chirurgical Society of Edinburgh.

various drugs at different times. About a month and a half before his death a medical man whom he consulted advised him to take thirty grains of sulphonal at night. This gave him excellent nights, and he seems to have taken the sulphonal every night from that time onward, so that one may calculate that he had taken at least 1200 grains, possibly more.

For about a week before his death it had been noticed that he staggered slightly in walking, and that his speech was thick and slurring, but, as he had been taking alcohol, no special importance was attached to these symptoms. On the 4th of the month his friends noticed that the urine was red in colour, and on the 5th he went to bed early in the afternoon, complaining of lassitude. On the 6th he remained in bed, and was noticed to be stupid and sleepy, but this, from his unfortunate habits, was so common an occurrence that not much was thought of it. On the 7th he was distinctly worse, and his attendants noticed that he had not passed water since the previous day. I was called to see him about 11 P.M. on that day.

I found him in a somnolent condition, when undisturbed sleeping quietly. It was quite easy to rouse him partially, and when roused he evidently understood what was said to him, and did what he was asked to do as far as he could. His motor power was seriously enfeebled, the grasp on the two sides equal but much impaired, and there was a corresponding weakness in all the muscles. He could not speak articulately. The pupils were of medium size, equal, and responded perfectly to light. The tongue was dry and red, with a slight fur in the centre. He had been constipated for some days, and a dose of Epsom salts had been given that afternoon, which he had promptly vomited. He had taken no food during that day, and seemed to find it impossible to swallow anything solid. His pulse was 90 per minute, fairly strong, and regular; the heart sounds showed nothing special beyond a slight want of clearness in the first sound. The respirations numbered 24 in the minute; there was some dulness with moist sounds at both bases posteriorly, and in the axillæ. The skin was cool and rather moist; the temperature was 98°. The urinary bladder gave a dull note for about a hand's breadth above the pubes, and I passed a catheter easily and drew off about 25 ounces of urine, the first portion of which was of the colour of dark port wine, while the latter portion was more like a deep claret.

At this time I knew nothing of the history of the case, as I had merely been asked to see it for a brother practitioner who was ill, so that I ordered what seemed immediately necessary in the way of treatment, and went home, taking some of the urine with me to examine. When I found that neither blood nor albumin were present in it, it occurred to me that the case might be one of sulphonal poisoning. Early next morning I went back to see him, and elicited from his friends the history I have narrated, which, not unnaturally, they had been reluctant to tell a stranger the night before. It had not occurred to them that there could be any relation between his symptoms and the sulphonal which he had been in the habit of taking, as the unfortunate man had several times assured them that it was a perfectly safe drug!

The patient was then in much the same state, but the pulse was distinctly weaker and somewhat irregular, and he died, rather suddenly, soon after I left him, remaining in the same semi-comatose state to the last.

The *post-mortem* examination was made twenty-four hours after death by Dr Robert Muir and myself, and the following are all the facts of importance we discovered.

The *liver* was somewhat chocolate-coloured, otherwise nothing special; gall-bladder full of bile.

The *kidneys* were somewhat congested, cortex normal in thickness, no evidence of cirrhotic change.

The *bladder* contained about half an ounce of red-coloured urine.

The *stomach* was in a state of granular catarrh and empty; no hæmorrhages in its walls.

The *spleen* was small, extremely congested, and almost diffluent; the Malpighian bodies were not very distinct.

The *suprarenal* bodies showed a cortex rather more yellow, and a medulla rather darker than usual.

The cavities of the *heart* were somewhat dilated, and the walls extremely fatty, especially that of the right ventricle; the valves were competent and healthy; the aorta normal but blood-stained; the blood everywhere fluid and chocolate-coloured.

The apices and anterior parts of the *lungs* showed no special change; the bases posteriorly seemed to be soaked in blood, were quite solid and of a dark purple colour, and sank in water at once; the bronchi were unaltered.

The *brain* was congested, markedly œdematous, the gray substance was pale and atrophied.

No other organ showed special change, and there were no changes that could well be ascribed to his abuse of alcohol, except, perhaps, the appearances in the brain; but I regret that the intestine and bone-marrow were not examined. Not our will was to blame, but the fact that the examination was made under great difficulties in a private house.

Portions of the various organs were fixed, some in sublimate, some in alcohol, cut in paraffin, and examined microscopically by myself, in the Laboratory of the Royal College of Physicians.

The *liver* showed no evidence of cirrhosis. The cells were very granular, had usually two nuclei, and a fair number of the cells at the periphery of the lobules contained fat globules—a certain amount of fatty infiltration was present. The blood capillaries were sometimes very full of blood, sometimes empty. In the connective tissue of the portal spaces there were sometimes a good many leucocytes; the walls of the branches of the portal vein were occasionally degenerated and hyaline. In the blood in the portal branches, but never in those of the hepatic artery or hepatic vein, were to be seen isolated liver-cells in fairly large numbers—far too many to have been swept in by the razor in the process of cutting. I am not prepared to explain this appearance: Dr Muir, to whom I referred the point, tells me that he has never seen this in the liver, but has sometimes seen a similar appearance in the lung in cases of pneumonia, and suggests that it is due to a partial disintegration of the tissue *post-mortem*, and that in the process of fixing and hardening, some of the cells are forced back into the vessels. Another possible, and to my mind more probable, explanation, is that the degeneration of the walls of the portal vein, which I have remarked on, may at some point have gone so far as to allow an opening into the vessel, through which the liver-cells may have passed into the blood-stream.

The glomeruli of the *kidneys* were congested, the epithelium of Bowman's capsule in some cases desquamated, while the epithelium of the convoluted tubules showed marked changes. The cells were almost all transformed into shrunken, granular lumps of protoplasm, without a trace of a nucleus, and were often cast off into the lumen of the tubules. The descending parts of

Henle's loops were nearly normal, but the cells of the ascending limbs showed the same changes as in the convoluted tubules, save that they were not so advanced, and that one could here study the process of chromatolysis in the nuclei. The collecting tubules showed no marked change. There was no evidence of cirrhosis, the affection was purely parenchymatous.

In the *spleen* the Malpighian bodies were small and showed no sign of active leucocyte production. The spaces in the pulp were packed with red corpuscles, all in the state of "shadows," that is, without their hæmoglobin. There was very little pigment in the spleen.

The cells in the cortex of the *suprarenal capsules* showed extraordinary individual differences. In some of the columns the cells were small and shrivelled, in others they were enormously large, and consisted of a few threads of cytoplasm enclosing large vacuoles, while the nucleus was shrunken; some cells seemed to have lost their nuclei altogether. The cells in the medulla were small, granular, and shrunken. There seemed to be less pigment than usual in the gland.

That part of the *lung* which was solidified with blood was examined. The alveoli were found to be enormously distended with blood in the form of corpuscle-shadows and hæmoglobin-stained plasma, while some contained masses of leucocytes also. The alveolar capillaries were distended with blood, the alveolar epithelium seemed to be entirely lost.

The large pyramidal cells in the *brain* cortex were rather shrunken, but the organ showed no marked changes.

Unfortunately I had no opportunity of examining the *blood* during life, but films were made from the blood in the heart *post-mortem*, and these showed a certain amount of poikilocytosis in the red corpuscles. The deformed corpuscles were mainly microcytes. A few nucleated red corpuscles (normoblasts) were to be seen. The leucocytes were rather numerous, and curiously enough were mainly lymphocytes; the actual percentages in the differential count were:—

Lymphocytes	83
Hyaline	13
Polymorphonuclear neutrophile .	3
Eosinophile, under . . .	1

Dr Noël Paton kindly examined the *urine* with the spectro-

scope, and reported that both hæmatoporphyrin and urobilin were present.

In discussing this case I wish to take up—

1. The clinical history of chronic sulphonal poisoning.
2. The differences between this and acute sulphonal poisoning.
3. The pathology of the two conditions.
4. Their treatment.
5. The conditions under which sulphonal should and should not be used.

1. *Clinical history.*—One must carefully distinguish, as Friedländer (1) was the first to do, between the by-effects which may appear after patients have taken sulphonal, and which are due to a temporary effect of the drug, and those more serious symptoms which are the result of its cumulative action, and alone deserve the name of poisoning.

The former usually appear on the day after a medicinal dose of sulphonal, and include headache, tinnitus, muscular weakness, feeling of fatigue, continued sleepiness, giddiness, loss of co-ordination, and sometimes a scarlatiniform rash. The percentage of persons in whom one or other symptom occurs is not very large, and as a rule they pass off rapidly, with the occasional exception of the disturbance of co-ordination.

Chronic poisoning does not set in unless the patient has taken at least several medicinal doses, and usually not unless he, or she rather, for women are much more frequently affected than men, has been taking the drug for a month or so. Schulz's fatal case (11) was in a woman who had only had 15 grains of sulphonal sixteen times in a month—an allowance which many people exceed—but I can find no other fatal chronic case where so small an amount was taken.

As a general rule the first symptoms to appear are gastro-intestinal, anorexia, thirst, nausea, vomiting, and especially constipation, which may be followed by diarrhœa. There is sometimes cardiac weakness, there may be a skin-eruption; temperature does not seem to be specially affected, as both rise and fall have been observed. Soon after the gastric symptoms, as a rule, appear nervous symptoms, of which the most marked are ataxia of the extremities and a staggering gait, sometimes, though not so often, paralysis of the extremi-

ties or of facial muscles, and in very severe cases, localised or general convulsions. Mental apathy and depression, with anæsthesia of the skin, often come on along with the motor symptoms, and in the fatal cases pass on to coma before death. Drowsiness is not a very prominent symptom in most cases until the final stage is reached. Sometimes early, sometimes later, appear changes in the urine, at first a diminution in its amount, then sometimes albuminuria, and especially that symptom which has come to be generally associated with sulphonal poisoning—hæmatoporphyrinuria—the excretion of deep-red urine, which owes its colour to the pigment hæmatoporphyrin. This urine is always intensely acid, and contains unchanged sulphonal.

Though it is evident that the hæmatoporphyrin must be derived from the hæmoglobin of the blood in some way, we know very little about the condition of the blood in these cases. Some observers have found a diminution in the number of red corpuscles, and a fall in the percentage of hæmoglobin, but the difference from the normal has seldom been very great, and many of the people in whom the poisoning occurred have been likely to be the subjects of a certain amount of anæmia. I shall have more to say of this in discussing the pathology of the condition.

The case which I have narrated was a fairly typical one, and terminated, as most of them do, by heart failure.

2. *The differences between chronic and acute sulphonal poisoning* are very considerable. The symptoms appear rapidly after a single large dose, taken by accident or for suicidal purposes as a rule. Sleep comes on, and sometimes a prolonged sleep lasting for days and followed for a time by giddiness, is the only evil effect. Sixty grains have produced a sleep lasting seventy-five hours, and in one case a woman who had taken 30 grains slept for forty hours, could not be awakened, and died at the end of that time!

In most cases which recover there are some after-effects —gastro-intestinal disturbance, muscular paralysis, ataxia, nephritis—which last for a longer or shorter time, and are not dependent on the amount which has been taken. It is curious, however, that hæmatoporphyrinuria only occurs, if it occurs at all, very exceptionally in the acute cases. With this may be noted the fact that in almost all the acute cases in which the

blood has been examined no abnormality has been found, or if any change was noted it was simply a diminution in the percentage of hæmoglobin, which need not have been due to the sulphonal.

The prognosis in the acute cases is relatively much better than in the chronic ones ; if treatment is begun early one can almost depend on saving the patient, while a pronounced case of chronic poisoning can hardly recover.

To recapitulate briefly, the symptoms in the *chronic cases* are usually — first, gastro-intestinal, especially vomiting and constipation, then nervous, ataxia and depression, passing into a sleep-like coma, and with that albuminuria and hæmatoporphyrinuria. If the patient recovers these symptoms pass off, the hæmatoporphyrinuria being usually the first to disappear, and some nervous symptom generally remaining longest. In the *acute cases* the first and prominent symptom is sleep, and only when that has ceased do the other symptoms become evident. They usually pass off entirely after some time and leave the patient well.

3. *The pathology and pathological anatomy of the condition* depend on the facts that sulphonal is not readily soluble, that it may remain for a long time in the alimentary tract, that it or its products may also be retained in the blood and cause changes there, and that it is ultimately excreted by the kidneys. It will at once be seen that any weakness, functional or organic, along its line of march will favour the occurrence of chronic poisoning on the one hand, or add to the dangers of acute intoxication on the other. Thus constipation favours poisoning, and we find that almost all the fatal chronic cases have occurred in people who were habitually constipated. Any affection of the liver, of the blood or heart, and, at the other end of the chain, of the kidney, will assist in the accumulation of the sulphonal in the body and enable it to produce toxic effects. There is no doubt that accumulation takes place in perfectly normal people. Morro (5) has shown that after a few doses have been taken the amount excreted unchanged in the urine becomes larger every day, and when the drug is stopped, unchanged sulphonal is excreted in the urine for at least three days.

Let us follow the drug in its course through the body, and see what changes are produced in the different organs. The

stomach and intestines are said sometimes to show superficial necrosis and Stokvis believed, from his experiments on rabbits, that hæmorrhages often occurred in the gastric and intestinal walls. These, however, are common in rabbits and not peculiar to sulphonal poisoning in them. In the liver, congestion has always been found, sometimes the cells are broken down, they are always more or less fatty, but I have nowhere else found described the degeneration of the walls of the portal vein which I have noted. The heart has generally been found to be fatty, and from its weakness result the various signs of stasis which I have described in the lungs and spleen of my case, while Hoppe-Seyler and Ritter (2) refer the occasional broncho-pneumonia to the aspiration of food-particles into the lungs during the coma.

With regard to the changes in the kidney there is a striking unanimity of opinion. The chronic cases of Marthen (3) and Stern (9) showed exactly the same destruction of the secreting cells which I have described, the acute cases of Hoppe-Seyler and Ritter and others presented it, and it has been produced experimentally in animals; so that it seems to be an invariable phenomenon. It accounts, of course, for the oliguria and albuminuria, and for the tube-casts which have often been found in the urine of both chronic and acute cases.

The hæmatoporphyrinuria is much more difficult to explain, and has roused the interest of many observers. Hæmato-porphyrin, or iron-free hæmatin, is derived from hæmoglobin when it is acted on by acids in the absence of oxygen. Hæmo-chromogen is first formed, which then loses its iron and be-comes converted into hæmatoporphyrin. It has been usual to assume that hæmatoporphyrinuria is causally associated with sulphonal poisoning and that it has to do with the frequent fatal issue, and to assume as a result of this that sulphonal is a blood-poison in the sense in which either chlorate of potash or anilin is a blood-poison. But it appears to have been overlooked that sulphonal can kill without the production of hæmatoporphyrinuria, and without causing any reduction in the number of red corpuscles or the percentage of hæmoglobin, for, as I have already said, hæmatoporphyrinuria does not appear in the acute cases, nor, in those acute cases in which it has been examined, has there been any change in the blood. In several of the chronic cases, it is true, anæmia has been

found, but it has been always the kind of anæmia which is likely to occur in the course of a parenchymatous nephritis—a slight diminution of the red corpuscles and a rather greater diminution in the hæmoglobin, without any marked change in the leucocytes. The facts, besides the hæmatoporphyrinuria, which make one think of sulphonal as a blood-poison, are the fluidity of the blood, and the ease with which the red corpuscles become transformed into shadows. The patients never looked specially anæmic, they were never cyanosed as in anilin poisoning, and it seems to me more than likely that the cause of death in both the acute and chronic cases is more probably to be sought in the kidney condition which is common to both, and which must certainly involve retention of products which should be excreted. It seems to me, in fact, that the cause of death is probably a uræmia, using the word in its widest sense, whose symptoms are masked by the effects of the drug. We must remember, too, that, as von Mering (4) has shown, it is impossible to produce hæmatoporphyrinuria at will, either in animals or man, even by giving large doses to animals for a long time, even though these animals were poorly nourished and acids were given along with the sulphonal, and the condition occurs in the most capricious way. Nakorai (7) has recently shown that Stokvis (10) was right in saying that hæmatoporphyrin was present constantly in the urine of patients suffering from lead poisoning, but the only other condition where hæmatoporphyrinuria is at all constant is in hæmorrhage from the intestine. Otherwise it is rare, though there seem to be small traces of hæmatoporphyrin in many normal urines. There seems a possibility that both in lead and sulphonal poisoning the hæmatoporphyrinuria may be due to intestinal hæmorrhage, but we know so little about the way in which sulphonal is absorbed, or even what are its decomposition products in the urine, that it is impossible to dogmatise on the matter. Kast's original view that it is excreted mainly as ethyl-sulphonic acid is not now widely held. Von Mering suggests that it may be excreted as amido-derivatives of ethyl-sulphonic acid. Certainly the urine is always strongly acid, and equally certainly, hæmatoporphyrinuria can be controlled by the free use of alkalies.

I am far from saying that sulphonal may not sometimes act as a blood-poison, and that the hæmatoporphyrinuria may not

partly be due to that, but there must certainly be some other factor at work of which we as yet know nothing, and which determines that in one case a patient shall take sulphonal for months or years unharmed, while another dies in a month from the time the first dose is taken.

It is somewhat curious that in my case, though the kidney was so seriously affected, no albumin was found in the urine by any of the ordinary tests. The explanation seems to me to be that there must have been complete suppression of urine-excretion for some time before death, probably for twenty-four or thirty-six hours, and that the urine which was drawn off by the catheter was the product of the kidneys before they became so seriously affected. It will be remembered that at the *post-mortem* examination only half an ounce of urine was found in the bladder, although it was about ten hours since the catheter had been passed, and that amount might easily have been left in the bladder after that operation. I suspect there had been complete anuria for some time before death.

I cannot explain the condition of the blood, especially the presence of so large a percentage of lymphocytes in the films, as I have made no special observations on the state of the blood found *post-mortem* in the heart. There certainly must have been some anæmia during life, or the few nucleated red corpuscles and poikilocytes would not have been present; but equally certainly the anæmia cannot have approached in degree that in a pernicious anæmia, or even that in the acute anæmias, as, for example, that of septicæmia. It is, of course, possible that the sulphonal or its products may in some way alter the hæmoglobin of the corpuscles or alter the blood-plasma, without causing a very extensive breaking down of corpuscles; but the mystery still remains unsolved, why it exerts its action as a blood-poison only in certain individuals, and only when it is allowed to act as a chronic and cumulative poison.

4. *The treatment of the two forms of poisoning* may be summed up as follows:—In the acute form, as the poison is absorbed but slowly, the stomach should be emptied if the patient is seen early enough, or the vomiting which is often present may be encouraged. Later, purgatives may be given to remove as much as possible of the drug from the intestine, and all possible means be tried to keep the kidneys acting freely. Neisser (8) saved his case, where 1500 grains had been taken

in a single dose, by giving large enemata of warm water, frequently repeated, which produced free diuresis, and it would probably be well to try this again. Other treatment must be symptomatic.

In the chronic form, while it would be well to clear out the bowels and to promote diuresis, the best results have been got by giving large doses of alkalies, as Müller (6) did, in such quantities as to render the urine alkaline if possible; probably both the bicarbonates and either the acetates or citrates should be given, but, as I said before, unless the chronic cases are very slight, the prognosis is very bad. Alkalies control the hæmatoporphyrinuria, and where their use has been stopped too early, the red coloration which had entirely left the urine has returned.

5. *Indications and contraindications.*—It is not worth while to speak of the indications, for I have made inquiries of several of the principal chemists in town and find that probably more sulphonal is used than all the other hypnotics put together, so that it evidently meets a felt want. It has the advantage of giving a very restful sleep; and as most people probably only use it now and again, so that plenty of time is allowed between doses for elimination, there is no great danger in its use in the majority of cases.

It should not be given in cases where there is great prostration, in cases where there is gastro-intestinal disturbance, especially if this takes the form of constipation, in cases of heart disease, in old people, or where there is a parenchymatous kidney lesion, acute or chronic. The maximum daily dose for a man should be 30 grains, for a woman 15 to 20 grains, and it should never be given continuously, but pauses of at least three or four days should be allowed from time to time to permit elimination of the accumulated drug. It should never be given in the solid form, both because it is less quickly absorbed, and acts less quickly in that way, and because it is more likely to cause gastro-intestinal disturbance. It is most soluble in hot alcohol, so that hot whisky toddy is probably the best medium in which to give it, the next best hot water.

The occurrence of any of the symptoms of chronic poisoning should be an indication to stop its use at once, and no patient who requires to take sulphonal for a long period should be allowed to pass out of observation. It is one of the dis-

advantages of the tabloid method of putting up drugs that patients can get such drugs as sulphonal without difficulty, and can continue their use without let or hindrance.

In cases where a hypnotic of the class to which sulphonal belongs is required, and where it is not desirable to use sulphonal, trional may with advantage be employed. Sulphonal is di-ethyl-di-methyl-sulphone-methane, and trional is derived from it by the substitution of another ethyl radical for one of the methyls. It is much more soluble, and consequently acts in a smaller dose, more quickly, more certainly, and without leaving the unpleasant after-effects of sulphonal. Though it is not absolutely free from the risk of causing chronic poisoning, it is much less likely to do so than sulphonal, as it does not accumulate so much. Its only relative disadvantages are that it costs about twice as much as sulphonal, and that it has a more unpleasant taste. It is displacing sulphonal largely in Germany, to judge by the opinions quoted by von Mering, but shows little sign of doing so in this country.

I do not consider that sulphonal should be regarded as a dangerous drug, but I would plead for greater caution in its use, and especially for greater discrimination in the choice of the cases where it is to be employed. Its apparent capriciousness of action is its chief danger, and a drug which has a recorded death-roll of at least thirty cases, and probably many more unrecorded, is not one which should be recommended with a light heart to the first-comer.

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PRIMARY EPITHELIOMA OF THE UVULA AND SOFT PALATE

By LENNOX BROWNE, F.R.C.S.Ed.,
Senior Surgeon to Central London Throat and Ear Hospital, etc.

Dr WALKER DOWNIE, commenting on the rarity of his own very interesting case published in the *Journal* for January, quotes from the third edition of my work, "The Throat and Nose and their Diseases," that I "have never seen malignant disease of the uvula arising primarily in that situation, but twice I have noticed it as an extension from epithelioma of the tonsil."

That is true, and he refers to one of Zurakowski as the only one he had been able to gather after an extensive research of the literature at his command.

I have here the opportunity of reporting one very similar to that of Dr Downie in most of the particulars of age, symptoms, treatment, and satisfactory result. To this I can add another strongly allied to it which was limited to the soft palate, without involving the uvula or tonsil—a condition which is at least equally rare.

It is probable that, attention having been drawn to the subject, the publication of these cases will lead to the conclusion that they are not so uncommon as they have been thought to be; and, indeed, in consideration of the number and variety of benign neoplasms that are to be found in the uvula and its neighbourhood, there is no reason why this particular portion of the palate should be exempt from the malignant.

Case I.—Primary Epithelioma of the Uvula

Mr G. H. A., æt. forty-eight, a sugar planter residing in Barbadoes, consulted me on June 15th, 1897, by the recommendation of Dr Watson of Tunbridge Wells. He stated that he had enjoyed excellent health in the West Indies, having had no illness except an attack of dysentery and occasional eczema. He had been married twenty-four years, and was the father of one child, a healthy girl, now thirteen years of age. He applied for advice on account of pain and difficulty in swallowing. He had recently become much thinner. The patient had been a great smoker and a "moderate drinker" of rum and other spirits. His family history was bad; for his father had died at sixty-three from

FIG. I.—CASE I. PRIMARY EPITHELIOMA (SQUAMOUS) OF UVULA

FIG. III.—PRIMARY EPITHELIOMA OF SOFT PALATE.

FIG. II.—MICROSCOPIC SECTION OF GROWTH IN CASE I. (½ IN. OBJ.)

PLATE VI.—TO ILLUSTRATE MR LENNOX BROWNE'S PAPER.

exhaustion, after amputation at the knee for sarcoma; while his mother, although still living at seventy-four, had undergone two operations for malignant disease of the breast, the first in 1887, the second in 1895.

On examining his mouth the uvula was seen to be a warty thickened mass, with all the characteristics of an epithelioma (fig. 1). The disease had invaded the palate, but so far the tonsils had escaped. There were no enlarged glands to be felt. On 19th June the whole of the growth, with a wide margin of the soft palate, was removed by the scissors, Dr John Macintyre kindly assisting, and Dr Holloway administering the anæsthetic. There was but little bleeding, and the patient made an excellent recovery with rapid regain of lost weight.

In *March* 1898 I heard from Dr Watson that the patient had written recently saying that "he is keeping quite well."

The completion of the case is not so satisfactory, for on *February 7th* 1899 I received the following communication from Dr Watson, which was in reply to a question made for the purpose of this report.

"I am sorry to say I have just had bad news from Barbadoes. Throat remained quite well, but a rapidly growing secondary growth in glands of neck recently took place. This was not treated surgically, and just before the mail left the patient sank from exhaustion and pressure symptoms after very little illness."

Thus the survival of this case has only been nineteen months.

The microscopical report by Mr Wyatt Wingrave of the removed tissue was as follows:—The specimen, labelled "'Mr A.,"' consists of typical stratified epithelial growths with small cell tissue. Horny 'pearls' are very numerous, and there can be no doubt whatever as to its malignant nature." Fig. 2, a drawing of the microscopic section, shows a localised activity of the surface epithelium which is invading the subjacent tissue in the form of cylinders, attended by inflammatory cell tissue, these cylinders in section appearing as true epithelial nests. The rest of the section was healthy.

Case II.—Primary Epithelioma of the Soft Palate

The drawing (fig. 3) was made from a patient whom I only saw once in February 1879. He was a man of fifty-two years of age, who had always enjoyed good health

until within the last three or four months, since which time he had experienced pain in swallowing. He had not become thinner. Both nares and larynx were slightly congested, which might be accounted for by the statement of the patient that he had always been a great snuff-taker. On examining the mouth the whole of the soft palate was seen to be unduly hyperæmic, with capillaries coursing over its surface, as shown in the illustration. There was a small warty growth just at the free border of the left anterior faucial arch, and slightly hanging over the supra-tonsillar fossa of that side. It was of such a character that I had no difficulty in diagnosing it as an epithelioma. The patient allowed me to remove a fragment for microscopical examination, which entirely confirmed my belief in the malignancy of the growth; but I could not induce him to have the whole removed, nor was I able to ascertain any details of the further progress of the case. It should be mentioned that there were no enlarged glands, but there was distinct tenderness on external pressure under the left angle of the lower jaw.

PARALYSIS OF THE CERVICAL SYMPATHETIC[1]

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THIS case which I bring before you to-day is one of paralysis of the right cervical sympathetic. I saw the boy for the first time at the Dundee Eye Institution some weeks ago, when he complained of defective vision, especially while reading. On examining his refraction under homatropine we found five diopters of hypermetropia in both eyes. During examination the following unilateral changes were observed, namely, anidrosis, myosis, ptosis, and enophthalmos, which pointed to an affection of the cervical sympathetic on the right side. The anidrosis was observed by the boy's father some three months ago, but, as it caused him no inconvenience, little or no attention was paid to it.

The boy is eleven years of age, and looks the picture of health. He comes of healthy parents, and he has never had a

[1] Case shown at the meeting of the Forfarshire Medical Association.

day's illness except six weeks ago when he was confined to the house for a few days with a mild attack of measles. There is no history of injury, nor of glandular enlargements in the neck. Dr Halley, who kindly examined the boy along with me, could find no structural change that would account for the paralysis. The only abnormality he detected was the presence of slight pain on deep pressure over the spinous processes of the third and fourth cervical vertebræ, and a slight tendency to hold the head to the left side.

On looking at the boy's face you will observe that the right side is dry and pale, while the left is moist and full-coloured. This difference is very marked when he perspires, and can be demonstrated by examining the lining of his cap, which is stained with perspiration on the left side, but not on the right. On examining his right eye you will see that the pupil is smaller than the left—*myosis*, that there is slight drooping of the upper eyelid—*ptosis*, and that the eyeball is more deeply set in the orbit than the left—*enophthalmos*. These symptoms produce no annoying sensations, and may escape casual observation. They are usually discovered, as in the present case, while examining for some other condition.

In 1869 Horner described for the first time the clinical appearances met with in paralysis of the oculo-pupillary sympathetic fibres, and later Nicati gave a more complete account of the diseases of the cervical sympathetic. Since then a few cases have been recorded, but, curiously enough, little or no mention of the condition is found in the text-books.

Let us now analyse the well-marked symptoms which this case presents :—

1. *Unilateral anidrosis.*—If the cervical sympathetic on one side be divided or destroyed, either accidentally during operation for the removal of tubercular glands or experimentally in some animals, certain well-defined changes dependent on vaso-motor disturbances are produced, namely, dilatation of the cutaneous blood-vessels of the forehead, face, and ear, increase of temperature, and more or less perspiration over the affected area. These changes do not always continue, for we not infrequently find (after a time) exactly the opposite occurring, as in this case, *e.g.*, the paralysed side becomes paler, cooler, and perspiration, so prominent to begin with, becomes conspicuous by its absence.

2. *Myosis.*—The contraction of the pupil is due to paralysis of the dilator fibres of the iris, which are supplied by branches of the cervical sympathetic. The sphincter muscle (third nerve), once its antagonist becomes *hors de combat*, gets the upper hand, and so the pupil becomes smaller, although its reaction to light remains unimpaired.

3. *Ptosis and narrowing of the palpebral apertures.*—Elevation of the upper eyelid, as you are aware, is produced almost entirely by the action of the levator palpebræ superioris muscle, which is supplied by the third nerve. The levator, however, is assisted to some extent by involuntary muscular fibres, which arise from between its bundles on the under surface, and pass forward to be inserted into the upper margin of the tarsal cartilage. In the lower lid we find similar fibres lying beneath the rectus inferior, and becoming attached to the tarsal cartilage of the lower lid. These involuntary muscular fibres are supplied by the cervical sympathetic, and are called the superior and inferior palpebral muscles of Müller, the superior assisting the levator in raising the upper eyelid and keeping it raised, the inferior, on the other hand, drawing the lower eyelid downwards. Their combined action is to assist in the widening of the palpebral aperture, thus checking the tone of the orbicularis palpebrarum when that muscle is not in action.

The importance of the palpebral muscles as an aid to diagnosis is well seen in Dalrymple's symptom (Basedow's disease), where the palpebral aperture is abnormally widened by irritation of the cervical sympathetic from the enlargement of the thyroid. Stellwag's symptom, which is incompleteness and diminished frequency of the involuntary act of nictitation, and not abnormal widening of the palpebral aperture as stated in most text-books, has nothing to do with the palpebral muscles of Müller, the orbicularis muscle alone being concerned. You will now see that paralysis of the cervical sympathetic produces the opposite effect to spasm, namely, a slight drooping of the upper eyelid, together with a narrowing of the palpebral aperture as seen in this boy.

It follows that the ptosis consequent on this paralysis, as you can see, becomes more manifest as the boy rotates the eyeball upwards, because the partially paralysed eyelid cannot follow the upward rotation of the eyeball to the same extent as when its muscular apparatus is intact. An opposite effect,

namely, spasm of the superior palpebral muscle of Müller from irritation of the cervical sympathetic by the enlargement of the thyroid, is seen in von Graefe's symptom, where the upper eyelid lags behind when the patient looks downwards, thus exposing the white sclerotic above the cornea.

4. *Enophthalmos.*—In paralysis of the cervical sympathetic this symptom is not very pronounced. It is due to paralysis of another bundle of non-striped muscular fibres, called Müller's orbital muscle or the protrusor bulbi, which is found in the fascia bridging the inferior orbital fissure. It is likewise supplied by a branch from the cervical sympathetic. When Müller's orbital muscle contracts, it tightens the fascia referred to, so that the eyeball is pushed forward—*exophthalmos*; but when the muscle becomes paralysed, the fascia is allowed to recede, with the result that the eyeball is drawn backwards into the orbit by the tone of the recti muscles—*enophthalmos.* But, besides Müller's orbital muscle, some non-striped muscular fibres, supplied by the sympathetic, have been found by Sappey in Tenon's capsule, especially in that portion attached to the orbital margin called the check ligaments. These ligaments resist the backward traction of the recti, so that under ordinary circumstances there is a sort of equilibrium produced as regards the position of the eyeball. When the cervical sympathetic is paralysed, both Müller's orbital muscle and the involuntary muscular fibres in Tenon's capsule become affected, as in this case, with the result that we find retraction of the eyeball or *enophthalmos* produced.

Besides these four symptoms, which we have analysed, we find in paralysis of the cervical sympathetic :—

5. *Heterochromia*, or different coloured irides. The colour of the iris on the affected side is said to become lighter as the myosis causes the colouring elements of the iris to be distributed over a larger area. In this boy the right eye is grayish-blue in colour, while the left is light brown. This symptom is, however, too pronounced to be explained by the myosis. It is very probably congenital, to a great extent at least, for the right eye corresponds in colour to his mother's and the left to his father's.

6. *Diminished intra-ocular pressure*, *increase in refraction*, and *diminished accommodation* are said to occur on the paralysed side, but are not found in this case.

7. *Changes in the lachrymal secretion* due to vaso-motor disturbances are said to exist, but I have not been able to find such changes here.

8. *Trophic changes in the face* are reported as a sequence to paralysis of the cervical sympathetic. In this boy you will see that the right side of the face is somewhat expressionless.

Causes of paralysis of the sympathetic.—These are chiefly lesions involving the sympathetic nerve in the neck, such as injuries, especially fractured clavicle; injuries during removal of cervical tumours; pressure by tumours, *e.g.*, goitre and enlarged glands; central lesions of the spinal cord; caries of the vertebræ in the lower cervical region; aneurisms, especially of the ascending portion of the arch of the aorta, involving the upper dorsal or lower cervical ganglia. In many cases, however, no cause can be found, and the present case appears to belong to this so-called idiopathic group. One point, however, may be mentioned, namely, that the boy has been in the habit of walking on his head and hands, which may have injured some of the cervical vertebræ. It is possible that the pain detected over the spinous processes of the third and fourth cervical vertebræ may originate in some lesion of the vertebral column in that region, which may have caused injury to the nerve.

DIABETES MELLITUS

being the substance of two lectures delivered in November 1898

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(Continued from page 108)

Treatment.—It is a matter of considerable importance that a man suffering from diabetes should lead, as far as may be, an easy life free from worries. If possible, he should give up any occupation which involves mental anxiety, as he is as a rule quite unfit to stand any strain of that kind, and such anxiety will tend to hasten the progress of the disease. The skin, as has already been said, is very dry, and it is of some importance therefore to excite its functions either by

means of tepid baths, or, if the diabetic condition is not a severe one, by mild Turkish baths. He should wear flannel or silk next the skin, and he should take as much exercise in the open air as he can stand without undue fatigue.

The most important point, however, in regard to treatment is that of diet. The object of course is to reduce the carbo-hydrates as far as may be. It is not possible to do this absolutely for any length of time, but by careful selection of the food, the amount of starch taken may be reduced to a very small quantity. It is of course necessary that you should in each case write out and give to the patient careful directions as to diet, and you should remember that after time diabetic diet becomes very distasteful, and it is of great importance to vary the food as much as possible, and by means of alterations in the method of cooking, to tempt the palate. The following will give you an idea of the lines on which you should proceed in this matter. Of solids, the patient may take the following:—Meat of any kind, fresh, salted, or even smoked—except liver; fish of all kinds, including shell-fish; poultry, game, rabbit, eggs, butter, cheese, lettuce, tomatoes, asparagus, water-cresses, celery, cucumber, mushrooms, and the various varieties of diabetic bread, provided these are reasonably free from starch. In small quantities, the patient may take—lemons, oranges (if not sweet), currants and cranberries. Subject to the reservation to be mentioned presently, you should forbid all farinaceous preparations, bread, rice, tapioca, semolina, arrowroot and the like. Peaches, turnips, asparagus, vegetable marrow, beet-root, green peas, cauliflower, all sweet fruits and sugar in any form are likewise inadmissible.

Of liquids the patient may take water, aerated water, tea, coffee, soups—which have not been thickened with farinaceous material—and, if you wish to give a stimulant, a little light claret, or a very little whisky may be allowed. Milk may also be taken, but only in comparatively small quantity. You should forbid the consumption of sweet wines and liqueurs, of cocoa and chocolates, and of beers and ales. The great difficulty is as regards bread, for which diabetic patients have an exceeding fondness. Diabetic bread is not very pleasant as an article of food, and sometimes you are obliged to allow a little ordinary bread. It is best taken

as thin toast, rather over toasted. In diabetic cookery, saccharine may take the place of sugar.

The various diabetic foods which are sold, are not, as has been said, very palatable, and in the case of many of them, if you have them analysed, as you should do, you will find that they are by no means as free of starch as is represented. One has, therefore, to be careful in the selection of the almond, gluten, or cocoa-nut cakes which you allow your patient to have.

In some cases of diabetes, certain carbo-hydrates can be taken without harm. Külz showed, many years ago, that in diabetics the liver frequently retains the power of transforming lævulose into dextrose, and consequently both lævulose and the nearly allied inulin have been used in the diet of diabetics. Regarding the latter of these, however, the careful observations of Sandmeyer show that it is very indigestible. Lævulose, which can be readily obtained commercially, may very properly be made use of in diabetic diet, care being taken to ascertain that the amount of sugar in the urine is not thereby increased.

Now, while in every case of the severe form of diabetes a somewhat rigorous diet requires to be adhered to if the disease is to be held in any way in check, no such severity of dieting is necessary in the lighter cases. Indeed sometimes when the sugar is small in quantity and is associated with gout, all that is needed is that the patient should be given a diet suited for that malady. And between these two extremes, all sorts of intermediate conditions may be found. That is, you may often encounter cases in which, though much starch occasions glycosuria, a small quantity will not do so, the amount of disturbances of the glycogenic function being slight. It therefore becomes your duty to discover—in the case of any individual patient—how much, if any, starch he can consume without increase of sugar in the urine. He should be put at first on a very strict diet, and after a week or so, when the quantity of sugar present in the urine has become stationary, he should be allowed to take a certain small quantity of starchy food. If no increase of sugar results a little more may be given, and in this way one learns what quantity of starch it is safe to give.

Patients who can afford to visit Vichy or Carlsbad, and to whom a few weeks spent abroad are not distasteful, may very well be sent to one or other of these places, provided

only that the disease is not too far advanced. I have myself seen very marked benefit follow a course at both these spas.

The medicinal treatment of diabetes is not very hopeful. Opium has been much used and sometimes great benefit follows its employment. It usually has to be given in rather full doses, and a remarkable diminution of the sugar in the urine may then be observed. Sometimes morphia may be found to suit better, and codeine is likewise frequently employed. Benefit may also be found to follow courses of arsenic. This remedy should be given in gradually increasing doses and for a considerable period of time. Many other remedies have been employed, such as lactic acid, glycerine, iodoform, antipyrin, phenacetin, salicylate of soda.

There remains only one point to note, viz., that in regard to the use of extracts of the pancreas, if, as we have reason to believe, destruction of the pancreas is followed by the symptoms of severe diabetes, it would seem logical, in the light of the results obtained with the thyroid gland in cases of myxœdema, to expect great benefit from the administration of extracts prepared from the pancreas. Unfortunately, however, this is not the case. Pancreatic extracts have been administered many times, but it is seldom that any distinct effect has been obtained. What the reason of this is I cannot tell you. It may be that the particular ferment of which we are in need has been destroyed in the preparation of the extract, or has been broken up by the juices of the stomach before it could be absorbed. However that may be, it may be hoped that in the not far distant future some method of preparation of pancreatic ferment and of its administration may be discovered, which shall prove useful in the cure of diabetes.

JORES' FORMALIN METHOD OF MOUNTING

By THEODORE SHENNAN, M.D., F.R.C.S.Ed.,
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IN the *British Medical Journal* of Nov. 5th there is an article on the successful application of a modification of Jores' method epitomised in the *British Medical Journal* Epitome, June 1896.

In view of this note I should like to place on record my experience of Jores' (not Tores', as in *British Medical Journal*)

original method as very slightly modified chiefly in the direction of more prolonged fixation by the formalin, and in the composition of the final mounting fluid.

For convenience I get the salts made up in separate powders as follows—

Sod. chloride . . .	700 grains	(1%)
Magnes. sulphate . .	1400 „	(2%)
Sodium sulphate . .	1400 „	(2%)

To make Jores' solution the three powders are dissolved in a gallon of tap water, and 7½ oz. formalin added to make approximately a 5% mixture.

After simply rinsing in water, the organs are placed in a suitable quantity of this fixing medium and left for a time depending on their size, changing the solution after two days in the case of large organs. The time varies from four days in case of a kidney or spleen up to a week to ten days in the case of the larger organs. If it be desired to preserve the whole of a liver, it is as well to inject the portal vein gently, but if it may be cut up into slices, the result as to colour is more satisfactory.

The tissues have now become dun-coloured, not absolutely slate-coloured as described, and they are thoroughly washed in spirit,[1] until the colour begins to freshen, then they are placed in strong methylated spirit, until the colour comes back distinctly. This generally requires twenty-four hours, though I have left organs in spirit for a longer time without any great damage.

At this stage it is as well in case of some organs, such as the lung, whose cut surface tends to become a little bleached, to remove a thin layer to expose the brightly coloured subjacent tissue.

The tissue is now transferred to equal parts of glycerine and water for a week. Until the tissue is soaked with this, it tends to float near the surface.

For final preservation and mounting, it is kept in

Glycerine . .	2 parts
Water . .	3 parts
Formalin . .	2 oz. to 1 gallon, or $\frac{1}{80}$ part.

If equal parts of glycerine and water are used for mounting as Jores directs, the fibrous tissue, *e.g.* the capsules of organs, thick

[1] Old, filtered spirit will do.

fibrous pleurisies, etc., becomes semi-translucent. This is avoided completely with the more dilute solution. The formalin is added to prevent the growth of fungi which was found troublesome at times.

I showed a series of specimens prepared and mounted in this manner at the recent Edinburgh meeting of the British Medical Association, and the colours were well preserved even in specimens mounted early in July 1896.

Colours due to presence of blood are well preserved, also muscle, melanin pigment, bile pigment. The yellow colour of fat gradually disappears. The translucency of cartilage and of mucoid and colloid tissues are preserved perfectly.

Parts may be taken at any time for microscopical examination, being passed at once into strong spirit, as they are already half dehydrated. Nuclear stains are extremely well taken.

For convenience of handling and demonstrating to a class, I have mounted some flat tissues in glycerine jelly. In these, which have been much exposed to the light, I have noticed slight though quite definite loss of colour. This has not been noticeable in those mounted in glycerine and water, probably because I have been careful not to expose them to strong light more than could be helped.

I have tried making up the fixing solution with potass-acetate, as recommended by Kanthack, but probably on account of some mistake in procedure the result was anything but successful.

Digest

ON THE CONSERVATIVE TREATMENT OF TUBERCULAR JOINTS AND COLD ABSCESSES, AS PRACTISED BY MIKULICZ OF BRESLAU—1890 to 1896

By C. W. CATHCART, F.R.C.S.,
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ALTHOUGH a crusade has now been opened in this and in other countries against the tubercle bacillus, the beneficial results of the attack may be a long time of appearing. Prevention is certainly many times better than cure, but until prevention has advanced greatly from its present position, the opportunities

for cure will be only too frequent. Meanwhile the number of young spines and limbs that are crippled every year all over the country by the onset of tuberculosis, probably mounts up to thousands. The children of the poor are most of all affected, and a large proportion of the sufferers, after long and painful illness, pass on to a premature grave. Direct surgical interference is often indeed beneficial—but only comparatively few of the total number of sufferers are for various reasons brought within its reach. Moreover, if the need for severe operations could be obviated by simple and easily applied means, the gain would be immense—the mischief would be checked in an early stage, the number of those brought within the scope of treatment would be greatly increased, and the results of healing, without that loss of tissue which an operation often involves, would be more satisfactory.

For some years past, in addition to fixation and rest, two very simple means of treating such cases have been in use, *i.e.* the injection of iodoform and the artificial production of venous congestion known as Bier's treatment. Allusions have been made to each of these in the medical papers from time to time, but as so many other methods have also been advocated we are often at a loss to know which of them may be expected to take a permanent place among therapeutic measures. In coming to a decision in such questions we naturally value the opinion of men of high standing and wide experience, who have had ample opportunity of watching results. Professor Mikulicz is one of these. He has advocated the use of iodoform since 1882, and is so well known as a surgeon that we may be sure that his preference for non-operative measures is certainly not due to any want of ability and readiness to operate, if operation would serve the purpose as well. As there are, therefore, many advantages in confining ourselves sometimes to an examination of the practice of one person, we propose to do so now in his case. Dr Henle, the chief assistant in the Breslau Surgical Klinik, has furnished us with the material. In 1897 he published a thesis on the treatment of tubercular joint diseases in the Breslau Klinik, 1890 to 1896.[1] This is essentially an advocacy of iodoform injection combined with

[1] Die Behandlung der tuberculösen Gelenkerkrankungen und der kalten Abscesse, in der Königlichen Chirurgischen Klinik zu Breslau in den Jahren 1890-1896, von Dr A. Henle oberarzt der Chirurg. Klinik. Breslau, 1897.

Bier's treatment in addition to local rest and improvement of the general health, and we feel that a brief account of Mikulicz's methods of applying these simple measures cannot fail to be appreciated.

There is no need to refer here to the history of the application of iodoform to tuberculous affections, nor to the various agents which have been used to dissolve or suspend iodoform. Mikulicz uses only a 10 per cent. emulsion of iodoform in glycerine. One great advantage of a glycerine over other agents is that glycerine is a strong antiseptic. It will destroy all the known pus-forming organisms, and as iodoform outside of the body is practically an inert powder, this saves much trouble and anxiety.

With regard to the *dangers of the iodoform-glycerine treatment*, we are told that all authors are agreed that a careful attention to the proper dosage makes it quite possible to avoid the danger of poisoning. The symptoms that have been described of an excessive dose of iodoform are severe mental affection, raised temperature, rapid pulse, paleness of the face, fixed eyes, spasmodic movement, albumen and strong iodoform reaction in the urine, and the latter also in the saliva. The test consists in adding a little starch-paste with sulphuric and nitric acid to the suspected fluid; the iodine is set free and turns the starch blue.

But glycerine itself has been shown capable of producing toxic symptoms. In slight cases there is a rise of temperature within twenty-four hours of the injection to about 38·5° C. with a pulse of about 115: these symptoms generally subside again in twenty-four hours. For a few hours blood pigment is found in the urine, but no kidney elements, nor blood corpuscles. Corresponding to the blood pigment there are traces of albumen. In more severe cases the temperature often reaches 39° C.; urine is of a deep brown colour, and has a considerable sediment containing hyaline and granular tube casts, and a reddish-brown detritus of amorphous lime salts, but no blood corpuscles. In a fatal case the collapse prevented the temperature from rising, but the pulse went up to 160; there was also sickness, vomiting, great thirst, restlessness, stupor ending in coma. Urine decreased in quantity, and of a dark brown colour. Death on the third day. At the *post-mortem* examination a high degree of acute parenchymatous nephritis was the chief pathological

change found. This was a case of hip-joint disease with abscesses in a child aged four years. The disease had been treated by Bilroth's method (to be afterwards described), and from 60 to 65 c.cm. of iodoform glycerine had been used.

Dangers of infection.—These may come either from imperfect cleansing of the patient's skin or non-sterilisation of the instruments or of the injected fluid. The line of puncture too may be infected with tuberculosis from the focus which is being attacked. The skin where the puncture is to be made must be prepared as for a surgical operation, and the instruments either boiled or well-soaked in 4 per cent. carbolic solution before use. Any trouble from the fluid employed is avoided by the use of glycerine as a vehicle. It is suggested that the disinfection of the needle track may be carried out by the injection of a little corrosive sublimate solution, but the author does not enter fully into this matter. Perhaps some iodoform emulsion left in the track might serve the same purpose.

Mode of action of iodoform.—Outside the body iodoform is practically inert, but when injected into a chronic abscess or other tubercular area it attacks the bacilli apparently after having been decomposed. Its action on the tissues is to increase the development of connective tissue. The clinical value of iodoform in tuberculosis is undoubted, and that for our present purpose is sufficient.

Mode of action of the suspending fluid.—Glycerine is destructive to bacteria, and although dangerous to the patient if injected in too large a quantity, it may be safely used if the proper dosage is respected.

Mode of employing iodoform in the Breslau klinik.—All modes of suspending iodoform have been given up in favour of the 10 per cent. emulsion of iodoform in glycerine. Neither the iodoform nor the glycerine are sterilised for the reasons already given. For puncture and injection of abscesses a medium-sized trochar is needed, which fits tightly into the point of a syringe. In case the trochar should become blocked with curdy matter, a sound should be at hand to clear the bore.

For parenchymatous injection and for small abscesses a metal-mounted glass syringe is recommended, holding about 15 c.cm. It should have rings on the piston and barrel to enable

pressure to be made with greater ease. The sharp pointed cannulæ should be of different lengths, and should vary from 0·9 to 1·5 mm. in diameter. They should screw on to the syringe to prevent their starting out when pressure is being exerted. Before use the cannulæ should be boiled and the syringe soaked in carbolic solution for several hours.

The quantity of the fluid injected depends on circumstances. For parenchymatous injection into the substance of pulpy synovial membrane, from 4 c.cm. in young children to 30 c.cm. in adults may be used, but it is better to begin with small doses and watch the results. For cold abscesses larger quantities may be employed, because the absorption from the abscess walls, which are protected by granulations, is much less than from fresh surfaces. As much as 100 c.cm. may be used for adults and proportionately less for children. If the granulation wall of the abscess has been removed by operation, a much less quantity can only be used with safety. On the withdrawal of the trochar a pad of gauze is fixed in position with crossing pieces of sticking-plaster, and over all compression is produced by overlapping turns of sticking-plaster. If the pus should be so thick that an incision is necessary, the wound is sewn up at once.

In the case of abscess an oblique puncture is considered advisable, and if the skin over the abscess should be thin and in danger of giving way, the puncture should be carried through the sound skin at a little distance from the place where pointing has begun. When this is done the thin skin often recovers.

As regards anæsthesia—as the pain is momentary, general anæsthesia is not required except sometimes in children. The injection of cocaine is not employed for fear of introducing sepsis.

General reaction may be absent or it may show itself in the form of sickness, fever, headache, faintness. Locally, nothing may be felt or there may be considerable swelling and pain. In parenchymatous injection or when injecting undistended joints it is more difficult to disseminate the iodoform than where simple abscesses are being dealt with. Tubercular joint cavities too are apt to be subdivided into separate compartments, and these have to be dealt with individually. The action of iodoform is confined to the part to which it is applied. Only a

slight amount of dissemination occurs through the lymph stream, and that merely within a small radius from the place where it is injected. Granulating surfaces in an open wound or in fistulæ do not easily take up iodoform, partly because the discharge washes it away and partly because in any case granulating surfaces absorb particles badly. It has been found, however, that if fistulæ are injected with the iodoform emulsion under pressure, a good deal more will be absorbed than otherwise.

Owing to the fact that the dissemination of iodoform is limited, the method of carrying out parenchymatous injection has to be adapted to meet this difficulty. The various parts of the joint have to be attacked in succession. The needle is plunged deeply in, and firm pressure is exerted upon the piston of the syringe till the point of the needle feels loose; it is then withdrawn a little, and the same is done again. Before taking out the needle it is thrust in a new direction, and the same procedure is adopted till the required quantity has been used. Next time another part of the joint is selected, and so on till the whole of the affected tissues has been overtaken. Even softened bones can be dealt with in the same way, but much greater pressure is required. Of course the iodoform must by this procedure be often forced into sound tissues, but that cannot be helped, and does no harm.

Neither massage nor passive movement is employed by Mikulicz to hasten the distribution of the iodoform. To provide for the swelling and tenderness that may be expected; when the lower limbs are affected, weights are lightened, bandages loosened, and limbs previously free are steadied with sandbags; until the reaction is over patients who were going about are kept in bed. Except where the pelvis or lower limbs are affected, however, confinement to bed is not thought necessary. Sequestra in bone are not to be taken as necessarily contra-indicating a trial of iodoform injection. If the neighbouring parts of bone can be infiltrated with the emulsion, the bacilli will be killed, and the sequestrum may be gradually absorbed.

As already stated, from 4 to 30 c.cm. are to be used at one time, according to the age of the patients and to their sensibility to the action of iodoform. The injections are made at intervals of from eight to fourteen days as a general rule,

sometimes much longer, but never under five days. The length of the interval is regulated by the amount of reaction, which should always have completely subsided before the next injection is undertaken. Where simple spaces are being injected in joint cavities or abscesses, the interval is longer, because the drug is generally brought into contact with the whole surface at the first injection.

The fluid distention in an abscess or joint is increased by the injection for the first two or three days. After that it gradually subsides, and in favourable cases disappears in from four to six weeks. The abscess becomes a scar, and instead of the hydrops there is a thickening round the joint with more or less disturbance of its function. The final disappearance of the fluid may be hastened sometimes by the pressure of an elastic bandage. A second puncture may be made at the end of from four to six weeks, but if the fluid found in the cavity then contains iodoform, a further addition of the drug is not necessary. Many abscesses are cured by a single injection, seldom does it need to be repeated more than once. Where an abscess complicates pulpy degeneration the two forms of treatment are combined, *i.e.*, the abscess is injected at long intervals and the synovial thickening receives parenchymous injection at shorter intervals.

Bilroth's method previously alluded to has been employed in certain cases by Mikulicz. Tubercular foci and granulation tissue are scraped away, and bleeding stopped by plugging with iodoform gauze or ligature of vessels when necessary. The wound is then closed by sutures with the exception of a narrow aperture left for the removal of the gauze and for the subsequent injection of the iodoform and glycerine; it being always remembered that the absorption is much greater from fresh surfaces than it would otherwise be.

Cases coming for treatment with fistulæ already in existence are not so easy nor so satisfactory to deal with. Sometimes sinuses may be scraped out and dealt with by Bilroth's method. Where the whole sinus cannot be reached, however, this plan should not be employed, and we must trust to injection of the emulsion under pressure. A conical nozzle is pushed into the fistulous opening, and if too small to block it, is supported by a plug of gauze; the fluid is then forced firmly along the sinus and is retained, under pressure by the finger or a plug of gauze,

for about ten minutes, after the nozzle is withdrawn. After that, a plug of gauze is fixed over the opening with sticking plaster, and compression is maintained with an elastic bandage for several hours. Such injections may be repeated twice or thrice a week, depending on the amount of reaction.

So far as the pulpy membrane and the tubercular bone are concerned, the only rule is to inject into the part which seems to be diseased; but the cavities of the different joints are best reached from the points which Krause showed after careful investigation to be most suitable.

For the wrist-joint points should be chosen just below the styloid processes of the radius and ulna.

For the elbow, the needle should enter just over the head of the radius in front. At the back the cavity of the joint may be reached from the radial side, the thickened capsule on either side of the olecranon.

For the shoulder Krause thought it better to work laterally from the coracoid process or from the spine of the scapula where it joins the acromion.

The ankle-joint is accessible from the apices of the malleoli. The needle is passed at first directly inwards, and its point is afterwards turned up. The thickened capsule may be felt on either side of the tendo Achilles behind, also in front, and is everywhere accessible.

The tarsal bones and joints can be most easily reached from the dorsum and sides of the foot.

The knee can be easily entered by a puncture on either side of, or just above, the patella. The subcrural bursa should not be omitted in tubercular synovitis. The needle to reach it should be passed through the tendon of the quadriceps.

For the hip-joint, either Krause's or Bünger's points may be used. The former directs the patient to be laid on his back and the thigh extended, adducted, and slightly rotated inwards; a long needle is then entered above the great trochanter at right angles to the axis of the thigh, and is pushed in until it strikes the head of the femur or the neck just below the head; when guided upwards over the head it enters the joint. Bünger directs the injection to be made as follows:—From the place where the femoral artery crosses the ramus of the pubes a line is drawn to the tip of the trochanter, and the needle is entered at the point where this line crosses the inner border of the

sartorious muscle. It is then carried directly back into the joint. Both methods have been used at Breslau to reach the cavity of the joint and also to attack the swollen synovial membrane. The back of the joint is accessible from the posterior border of the great trochanter.

Psoas abscesses are punctured as soon as they come sufficiently near the surface to allow of their being reached without fear of passing through the peritoneum. Otherwise there would be a risk of causing tubercular peritonitis.

Venous congestion.—Since 1892, when Bier brought this method before the German Surgical Congress, it has been extensively used in Kiel and elsewhere, and it has been employed at Breslau since the beginning of 1893 in combination with the application of iodoform as already described. The object is to produce venous congestion. It is not clear how the beneficial change is brought about, but that such does take place there seems to be no room for doubt. The limb is first bandaged firmly to within a few inches of the joint. Above the affected joint a rubber tube or bandage is then wound sufficiently tightly to produce a distinct bluish-red discoloration of the skin of the unsupported parts below.

In some patients the full amount of congestion can be easily borne from the first, in others it must be begun gradually and increased as the patient gets used to it. The congestion may be maintained for from fourteen to eighteen hours out of the twenty-four, and the remaining time may be employed to get rid of the œdema by the use of elastic pressure applied over the joint itself. As the condition improves, the length of time during which the congestion is kept up may be diminished by degrees. To prevent ill effects from the pressure of the elastic bandage, its position should be frequently altered and an ordinary bandage should be applied between the skin and the rubber.

It is not claimed for the methods of which we are now speaking that operative procedures are thereby done away with altogether, only that the need for them is greatly diminished and that the operations required are less extensive than formerly. Henle explains Mikulicz's methods of operating when it becomes necessary, but as our present purpose is to explain the conservative measures we will not follow the account of the operative treatment. Neither does it seem necessary to give an account

of the splints used to ensure rest for the affected joints, as those in use among us will probably serve the purpose sufficiently well. For the same reason we may pass over the directions given for the improvement of the general health.

The following summing-up of the application of the method will, however, be found useful.

In the parts of the limbs where the venous congestion is applicable, *i.e.*, below the hip or shoulder, this method and fixation (or attempted improvement of the position of the joint) constitute the first stage of the treatment; and this is continued for from eight to fourteen days. Then from 6 to 10 c.cm. of the emulsion for children and from 15 to 30 c.cm. for adults is injected into and round about the joint. Abscesses, however, are injected straight away if the diagnosis is clear and their position suitable.

The intervals at which the injections are to be repeated have already been mentioned. During the longer intervals the patient may be sent home or to some health resort, but all the time the venous congestion should be maintained. When a fair trial of conservative treatment has been given without definite improvement, operative measures will require to be undertaken; but the experience in Professor Mikulicz's Clinique has been that the operations, since these conservative methods have been in use, have not only been much fewer, but also much less serious.

The results of the treatment are discussed by Henle at considerable length, and many tables are given which have been compiled from different points of view. It would extend this article unduly if we were to attempt to reproduce them. Probably, therefore, it will be sufficient to say that this conservative treatment has established itself more and more firmly in favour as time has gone on. The actual number of cures by its use is equal to that attained by the ordinary operative methods, while the functional results which it gives are decidedly better and the mortality is less. Only in adults, with a fixed patella, is primary excision preferred to the conservative measures which have just been indicated.

Meetings of Societies

Edinburgh Medico-Chirurgical Society

THE fourth meeting of the seventy-eighth session of the Medico-Chirurgical Society of Edinburgh was held on January 18th—Dr P. A. Young, Vice-President, in the chair.

Mr Greig showed a patient with symmetrical and congenital perforation of both parietal bones. Patient was a man of less than average size, somewhat microcephalic, and occupying the superior and posterior angles of the two parietals were two unossified areas, circular and symmetrical. The deformity did not interfere with his duties, and gave no discomfort, except on firm pressure, which produced flashes of light in both eyes. The condition, Mr Greig remarked, had not previously been described during life.

Mr Caird and Mr Guy showed a patient with syphilitic destruction of the nose and palate so extensive that one could pass the finger as far as the cribriform plate and the sphenoidal cells. Owing to the impossibility of fixing an artificial palate in the usual way Mr Guy had constructed, in one piece, adjusted by means of a spectacle frame without glasses, an artificial palate, nose, upper lip, and moustache, and had thereby immensely improved the patient's appearance.

Dr Harvey Littlejohn showed two specimens of hypertrophy of the heart from cases of sudden death, one of them weighing forty-eight ounces. He next exhibited the heart of an old woman, which showed a rupture, 2½ inches long, of the internal surface of the left ventricle, but in which there was no perforation of the ventricular wall. He also showed, for the purpose of pointing out the preservative and colour-retaining value of formalin, an ordinary case of clot between the bone and dura mater.

Dr Alexander Bruce read a paper on "The Localisation and Symptoms of Disease of the Cerebellum considered in relation to its Anatomical Connections." He said the symptoms of cerebellar disease might be divided into two groups, viz., (1) those of any intracranial disease and of no diagnostic value, such as headache, vomiting, vertigo, etc., (2) those peculiar to lesions of cerebellum such as gait, ataxia, oscillation of eyeballs, etc. But many cerebellar lesions were without these symptoms or had only some of them, and these differences were not due to the nature of the lesion, but depended on differences in its situation. Nothnagel's contention that disturbance of equilibrium was due to lesion of the middle lobe was true in the main, but was in need of qualification, as he himself admitted, for lesions of the

lateral lobe also sometimes produced similar effects. By means of diagrams Dr Bruce showed that the cortex of the middle lobe forms the central termination of the six afferent tracts from the cord, and that none of these tracts pass to the lateral lobes.

Till recently, the relations of the nucleus of Deiters were very obscure; its being filled with large cells exactly similar in appearance to the ordinary motor cells of the anterior cornua of the cord had years ago led Dr Bruce to consider it likely to be a motor nucleus, and it had indeed been proved to be composed of cells that sent fibres in a downward direction. Some fibres leave it for the sixth nucleus, another set ends in the third nucleus, and yet another tract passes down to the antero-lateral columns of the cord. More recently it had been found by Risien Russell, by Ferrier, by Turner, and by Thoma, that one strand was connected with the longitudinal fasciculus of the same side and with the third nucleus, and that another strand was connected with the longitudinal fasciculus of the opposite side and with the third nucleus.

It was found also that fibres pass down to the anterior columns of the cord and that they could be followed to the lower thoracic region. Thus there was a bundle passing to the ocular muscles, one to the anterior cornua of grey matter, and another going down to the antero-lateral columns. Another important connection was a bundle of fibres efferent from the roof nucleus to the nucleus of Deiters; that this was an afferent bundle had been clearly disproved. A sensory afferent set of fibres from the direct cerebellar and Gowers' tracts passed up to the cortex of the middle lobe, and so completed a sensory-motor chain, the integrity of which seemed essential for the perfect maintenance of equilibrium.

The superior cerebellar peduncle, equally with the inferior, was also concerned with the maintenance of equilibrium, and its destruction caused exceedingly marked disturbance. What was known with regard to experiment Dr Bruce explained by means of a scheme. If the inferior peduncle was destroyed there was great disturbance of equilibrium and rolling to side of section. In the case of the superior and of the middle peduncles similar results followed. But on examining Ferrier's writings it was evident he had destroyed not only the middle but the superior and inferior peduncle as well, and therefore his account was really that of a much more complex experiment. It was difficult to see how the middle peduncle could be cut without serious disturbance of the superior and inferior also. If a section of the middle lobe were made exactly in the middle line, the disturbance of equilibrium was very slight and the animal tended to fall to either side indifferently; the effect on one side balanced that on the other, so that there was no disturbance of symmetrical

action. Section of half the middle lobe had much the same effect as the removal of one lateral lobe—the nucleus of Deiters was affected and animal fell to side of lesion. Section of whole of one half of the cerebellum was followed by much the same effects. When the injuries were slight and in lateral lobe, symptoms were slight and were speedily recovered from.

Turning now to the symptoms produced by tumours, Dr Bruce said that tumours in the middle lobe would tend to affect equilibrium, because they would interfere with the afferent and efferent tracts; and, as pointed out by Bramwell and by Ferrier, tumours of the middle lobe which lie at one or other side of the middle line were more powerful disturbers of equilibrium than if they were in the middle line. Tumour of the lateral lobe without pressure on the nucleus of Deiters, the nucleus dentatus, or the restiform body might be symptomless, or at least almost so; but if such a tumour were to pass so far inwards as to touch one of these, symptoms were produced. It was not possible to analyse the symptoms in detail, but if the nucleus of Deiters and the tracts leaving it were involved there were produced eyeball movements, disturbance of co-ordinating power of eye-muscles leading to vertigo, and a tendency to fall to one side.

Dr Shennan (and Mr Miles) read a paper on a case of aphasia following abscess in the temporo-sphenoidal lobe, secondary to middle-ear suppuration. The aphasia and paraphasia commenced only after the evacuation of the abscess. There was amnesia, particularly of nouns and names, but the word-hearing centre had escaped. The patient died with symptoms of general compression, and at the *post-mortem* there were found an old abscess, occupying the greater part of the temporo-sphenoidal lobe, with the exception of the posterior part of the superior convolution, and recent abscesses in the angular gyrus and external capsule. There being no pure word-deafness, the case was unique, and supported Dr Wm. Elder's theory of a special area for nouns, probably situated lower down in the temporo-sphenoidal lobe, and communicating with the occipital lobe. Dr Elder remarked that verbs and prepositions were probably not associated with the occipital lobe, but with the areas round the fissure of Rolando.

The fifth meeting of the session was held on February 1—Sir John Batty Tuke, President, in the chair.

Dr R. Fleming showed a mother and four children apparently suffering from Addison's disease. The mother, aged twenty-eight, had enjoyed good health up till marriage, and had borne five children, one of whom was dead. Each successive pregnancy had resulted in a deeper pigmentation; but she dated her actual illness from the birth of her last baby, two years ago, though for

the last seven years she had noticed pigmentation. The colour of the skin was darker in summer than in winter, but the mucous membrane of the mouth did not show the pigmentation markedly in the mother, and not at all in the children; there were numerous moles dotted over the body and face. The chief symptoms in both mother and children were attacks of vomiting and diarrhœa without cause, and of palpitation, faintness, and great languor. Undoubted improvement had followed the use of arsenic and various other drugs; suprarenal extract had not been tried.

Dr Russell and Mr Cotterill showed a patient after operation for mastoid abscess and empyema. There had been severe rigors with remittent temperature before any ear symptoms had manifested themselves. There was fœtid pus between the dura mater and the skull. The empyema was secondary to the mastoid suppuration; it also was fœtid.

Dr Shennan showed a set of specimens under the microscope:—(1) Vessels from a case of tubercular meningitis; (2) early tubercle of the urethra; (3) diphtheria bacilli (long form); (4) organism in cancrum oris, separated twenty-four hours after death. Dr Shennan remarked that the bacillus causing cancrum oris was very similar in appearance to certain involution forms of the diphtheria bacillus. It showed a large club-shaped end, it was separable on agar, and it possibly had to do with acute spreading gangrene, causing sloughing.

Dr R. Fleming showed two mammillated stomachs. The first was that of a woman of fifty-four, who died of exhaustion from excessive vomiting. She had had a very marked form of chronic gastric catarrh, and the stomach showed little projections all over the mucous surface. The second was from a case of chronic gastric catarrh following heart disease, in which vomiting hastened death. Dr Fleming's third specimen was one of chronic gastric ulcer, which had become adherent to, and had penetrated into, the liver. A heart showing aneurism of one of the sinuses of Valsalva was also exhibited by Dr Fleming.

Dr W. Stewart and Dr John Thomson showed a specimen of congenital malformation of the œsophagus.

Mr Cotterill exhibited a specimen of large intestine showing line of suture after enterectomy done eleven years ago.

Dr P. M'Bride read a paper on the treatment of ozæna, with special reference to cupric electrolysis. He said that to discuss the various remedies would be useless, for, as in all intractable affections, innumerable drugs and measures had been tried. He briefly mentioned the more important:—(1) destruction of the secreting area, *e.g.* by scraping instruments; (2) application of stimulants and irritants by tampons of spirit, mustard, or caustics, as advocated by Gottstein; (3) vibratory massage; (4) careful cleansing by alkaline washes, a measure of the very

highest value. Dr M'Bride was able to confirm the good results obtained by Chiari by painting the interior of the nose with solution of iodine. Lately, two new therapeutic measures had been introduced, viz., diphtherial antitoxin and cupric electrolysis. Of a series of thirty-two cases treated by antitoxin by two Italian observers, sixteen cures were reported. But other observers were not in favour of this method because of the fever and rashes, and Dr M'Bride had never employed it, as he did not think it fair to subject patients to a remedy which was not without harm. Cupric electrolysis, with one pole inside the nostril and the other on the back of the neck, was first tried in 1892, and at a meeting of Belgian laryngologists in 1895 a series of cases was recorded with 91 per cent. of cures.

The first patient on whom Dr M'Bride tried this new method was a male of twenty-six, who had had nasal trouble for ten years; he had no sense of smell, and had atrophy of the inferior turbinated. Cupric electrolysis was performed five times, he at once began to improve, the secretion became liquid, and there was no bad smell. The second was a girl of seventeen with crusting, fetor, and atrophy. Within eighteen months four sittings were given, with the result that the fetor disappeared, but the atrophy remained. The third case was that of a girl of twenty, who for seven years had had fetor and very adherent crusting. After three seances the crust had come away, and the fetor had disappeared. The fourth case was that of a female of twenty-four years, who for ten years had had pronounced fetor and crusting. Here there was improvement, followed by a relapse. These were but a few of a large number treated, the strength of current being from 3 to 10 milliamperes. In most of them cocaine was used, and, after cleansing the nose, the copper needle, attached to the positive pole, was inserted into the inferior or middle turbinated, while the platinum needle was passed into the septum. With the exception of one case, which had neuralgic swelling of the eye for a day or two, there was little pain, and there were no bad effects. Each sitting lasted ten minutes, and the cases had not been selected. Of ten cases, four were cured for long periods, the remainder were more or less improved for longer or shorter periods. Dr M'Bride thought that in cupric electrolysis we had probably the most valuable therapeutic resource, but that the deposit of copper salts at the positive pole had as much to do with the success of the treatment as the electrolysis. Further, should these cases eventually relapse, the discomfort of undergoing the treatment once or twice a year was slight compared with daily syringing.

In the course of the remarks which followed, Dr Logan Turner said the interest of the treatment lay in the possible rationale, and we might find information on the cause both in

the results obtained by antitoxin and by cupric electrolysis. There was a leaning towards the bacteriological etiology, but bacteriological examination of the nose after the disappearance of fetor showed that organisms were still present, and it was doubtful if the cupric electrolysis acted as a bactericide. The fact that the application of the needles to one nostril was followed by good results in the other put out of court the bacteriological idea. Dr Turner suggested that electrolysis acted by causing a general stimulation of the mucosa, of its blood-vessels and nerves, and that anti-diphtherial serum acted in a similar way. Normal horse serum had a good effect, just like that of the anti-diphtherial, probably by increasing vascularity and thereby throwing off crusts.

Dr George Hunter thought the disadvantage of cupric electrolysis, for the general practitioner at least, was the elaborate apparatus necessary. He had found the application of blistering fluid followed by marked and lasting benefit.

Dr M'Bride, in replying, said he had obtained cure by painting with iodine solution, and he thought Dr Hunter over-rated the difficulties of this method, since in three or four sittings the treatment was over. But it was doubtful if this treatment would be permanent.

Mr Wallace read a paper on "Movable Kidney," which appears in full in the current number of this journal. Remarks were made by Mr Cathcart, Mr Cotterill, and Mr Stiles, and by Drs R. A. Lundie, Church, and Russell.

Edinburgh Obstetrical Society

THE fourth meeting of the Society was held on February 8th —Dr Halliday Croom in the chair.

A colloid ovarian tumour, which had given some difficulty in diagnosis, was shown by Prof. Simpson. A remarkably pretty specimen of early twin abortion due to *Deciduitis Tuberosa* was exhibited by Dr Haultain. Dr Lamond Lackie showed a drawing of an incarcerated umbilical hernia in an infant; the coverings had become gangrenous, but in spite of this reduction was progressing satisfactorily under pressure. A simple ovarian tumour shown by Dr Croom was interesting from the fact that its removal, which presented no difficulties, was followed by acute mania, with death on the second day.

Dr J. W. Ballantyne gave a paper on *The Place of the Pessary in Modern Gynæcological Practice.* The importance of this subject could not be gauged from the space devoted to it in the Society's Transactions in the last twenty years, which only

amounted to six and a half pages. Enquiry at the various instrument makers showed (1) a steady increase in the number of pessaries sold in the last twenty years; (2) a decrease in the varieties asked for, the most frequent being the ring and Hodge, or their modifications, and occasionally a vaginal stem; (3) a growth in the demand for curettes; (4) an almost complete absence of demand for intra-uterine stems.

A study of twenty well-known text-books showed eight strongly in favour of the pessary, five strongly against it, and seven critical of its employment. The advocates of the pessary admit that it has inconveniences, that it must be used with care and intelligence, that it seldom cures, and that it must occasionally give way to operation. Those strongly opposed, admit a small residuum of cases where it may or must be used. The chief objections urged against the pessary are—(1) Its *inconvenience*, amounting in some to unpleasantness, giving an unhealthy feeling of dependence on a medical adviser, entailing regular douching, setting up or aggravating a mal-odorous discharge, interfering possibly with marital relations. (2) *Inefficiency*, in that it rarely cures, some doubting, indeed, if it ever even relieves symptoms, and stating that it may be doing further harm by damaging to a still greater extent the supports of the uterus. (3) Its *injuriousness*. Intra-uterine stems, Zwanck and large ball pessaries have come in for special condemnation, from which the ring and Albert Smith, carefully used in suitable cases, have been generally acquitted. Other writers regard all forms as dangerous, and include among the sequelæ to be expected from their use—pruritus, vaginitis, ulceration, fistula formation, prevention of union of a torn cervix, subinvolution, cancer, septic inflammation of uterus and tubes, and one writer (Balls Headley) magnifies the inconvenience in marital relations into a danger to morals, saying that the pessary "strikes at the root of the institution of marriage, and especially of monogamy."

The general advantages claimed for the pessary are—(1) *Convenience*, all strong supporters emphasise this; an occasional visit to a gynæcologist, occupying only a few minutes, frequent vaginal douching which may be required anyhow, and a transitory feeling of uneasiness in the pelvis when the pessary does not fit exactly or has been worn too long, cannot be regarded as sufficient reasons for advising a patient to face the ordeal of a plastic operation with all its inconvenience, expense, and enforced confinement. (2) *Efficiency*. All advocates of the pessary say that it is effective in relieving symptoms, and some maintain that a permanent cure may be effected in some cases in a longer or shorter time. (3) *Safety*. Most gynæcologists admit the safety of the ordinary vaginal forms. Others also claim that intra-uterine stems and instruments of the Zwanck

type are innocuous; bad results are put down to want of care on the part of the physician or patient.

The opinions of those gynæcologists who give a critical approval to the use of pessaries are best reviewed under the various displacements. In (1) *incomplete prolapse*, the employment of an india-rubber ring or Hodge Smith, with or without transverse bars for cystocele, relieves symptoms, gives time for the natural supports to regain their tone, and in the event of pregnancy occurring, or the climacteric, may usher in a permanent cure. Most authors agree that pessaries in these cases have only a palliative and temporary effect. (2) In *complete prolapse* the only possible form of support is the vaginal stem. The Zwanck and all instruments with screws and hinges are generally regarded as unsatisfactory and dangerous. Even with such forms as the Cutter pessary the relief afforded is precarious. (3) *Antrorsions.* Most authorities are agreed that vaginal pessaries can do no good here, except possibly when metritis is superadded and the support of a ring might benefit that condition. The use of the intra-uterine stem is condemned by most of these writers as dangerous and tending to sepsis, inflammation, and perforation of the uterus. The stem brought forward by Lefour seems to be the least dangerous—it has no vaginal portion. (4) In *Retrorsions*, these writers are by no means agreed as to the position of the pessary here, and several of them find it necessary to consider the subject under a number of headings. Thus J. C. Webster divides cases of retroversion into seven classes, and gives special directions for the management of each; these considerations set forth by Webster express the opinions of the majority.

The paper was largely discussed by the members present, most of whom allowed the pessary a large sphere of utility.

Dr Halliday Croom read a communication on *Vaginal Hysterectomy for Cancer of the Uterus.* He took up the position that the operation, as at present performed by Doyen's method, tends neither to the prolongation of life nor to relief of suffering. A tabulated statement of his cases showed that the disease had returned in all, and usually within the year. His experience in these cases was that the expectation of life was materially shortened by the operation, and the final sufferings rather increased than otherwise.

Forfarshire Medical Association

A SPECIAL meeting of this Society was held in the University College, Dundee, on Friday, January 20th, 1899, at 4.30 P.M.—Dr Paton of Carnoustie, President of the Association, presided over a good attendance of members.

Dr Templeman introduced a discussion on tuberculosis from a public health point of few, and the steps which should be taken to bring the matter under the notice of the public authorities. He concluded his remarks by moving the following resolution:—"That that meeting of the Forfarshire Medical Association view with warm appreciation the national movement for the dissemination of the knowledge and true nature of tuberculosis and the best means for its prevention." This Dr J. W. Miller seconded in a few remarks, emphasising the necessity for the local authorities having a stricter control over the milk supply. Dr Urquhart of Perth supported the resolution.

Dr Sinclair moved that a deputation wait upon the Lord Provost and ask him to convene a public meeting on the subject. This was seconded by Dr J. Mackie Whyte, and the deputation agreed upon was Drs Paton and Halley (the President and Secretary of the Association), and Drs J. W. Miller, Sinclair, and Templeman.

Meeting on February 3rd at 4 P.M.—Dr M'Gillivray in the chair.

Professor Kynoch showed a solid tumour of the ovary associated with a multilocular cyst, weighing 7½ lbs., removed on account of rapid ascites. The liver was cirrhotic, and so the cause of the ascites was doubtful. Reference was made to two other cases of solid ovarian tumours.

Dr Halley showed a uterus from a case of ruptured extra-uterine gestation which also had a fœtus *in utero*. The patient, aged twenty-nine, was admitted to the Infirmary in an extremely collapsed condition, suffering severe pain, which had come on suddenly eight hours previously. She stated that she was seven weeks pregnant. On opening the abdomen it was found to be filled with blood which was seen to be escaping from a rupture in the right Fallopian tube just external to its junction with the uterus, which was noticed to be somewhat enlarged. The Fallopian tube was ligatured as rapidly as possible, and the wound closed, but the patient scarcely rallied at all from the excessive bleeding, and died in ten hours.

Dr J. W. Miller read notes of a case of lateral sclerosis which he had under his care twenty years ago. The illness commenced with sudden attack of abdominal pain, which recurred at intervals, and was followed later by tetanic contractions, at first in the right arm and later extending to other parts of the body. These tetanic spasms were the most marked symptom and were easily induced. The patient lived three and a half years, having been bed-ridden three months before her death with paralysis of upper and lower extremities, but having no impairment of the intellect.

Professor Stalker gave an account of a case of Bright's

disease with uræmia, which had been treated by venesection with the result that the convulsions ceased. When any signs of impending uræmia showed themselves, venesection was performed, and the signs disappeared and the convulsions were prevented. After four venesections the headaches did not recur, but the daily amount of urine still remained low. This improved under internal administration of pilocarpine and tapping of the abdomen for ascites. Other remedies had failed, and the patient was now doing well.

Professor Stalker referred to a case which his colleague, Dr Whyte, had treated by venesection with the same result.

He thought venesection was of distinct benefit in cases of kidney disease where there was very little dropsy and persistent headache, and also in some cases in which cardiac distress was at its worst.

Dr Steele Moon quoted two cases in which he had performed venesection with improvement when other remedies had failed, one of bronchitis with marked dyspnœa and the other of uræmia.

Dr J. W. Miller, Professor Kynoch and Dr Duncan also spoke.

Obituaries

Professor Joseph Coats

THE medical profession, the University of Glasgow, and the West of Scotland sustained a great loss on the 24th of January, when Joseph Coats passed away in the fifty-second year of his age. He was not only a distinguished pathologist who made his mark on the literature of the science, but to him will always belong the credit of being the first in Glasgow to teach pathology as a separate subject, and to secure for his favourite department of medical science adequate recognition as being worthy of a Chair, of which he was the first occupant, and of a laboratory in connection with the Western Infirmary, furnished with all the modern requirements both for teaching and for research. This was the work of his life. Dr Coats was from the days of his medical curriculum devoted to pathology, and, after imbibing knowledge from such men as Lister and Gairdner, he went to the Continent, and there he worked chiefly in the laboratory in Leipzig presided over by Ludwig. The German physiologist, with that ready sympathy to recognise originality and ability, gave to Coats a research on the work of the heart as influenced by the nerves. This was successfully carried

PLATE VII.—PROFESSOR COATS.

out and is now a classical research which will always have a foremost place in the historical development of our knowledge of the cardiac mechanism. On his return to Glasgow, he devoted himself entirely to pathological pursuits. From 1869-1875, he acted as Pathologist to the Royal Infirmary, and he compiled the first edition of the Catalogue of the Museum of that Institution. From 1875 till his death, he was Pathologist to the Western Infirmary. The Chair of Pathology in the University of Glasgow was founded in 1893, and, without a moment of doubt or hesitation, Coats was appointed to it, and he thus attained what was no doubt his ambition for many years. Three years later, in 1896, the Pathological Institute in connection with the Western Infirmary was opened, with Coats as its first director, and by a most happy arrangement, the interests of the University and of the Western Infirmary became one so far as pathology is concerned. While he was engaged during all these years as a teacher of pathology, no one was more earnest in original investigation ; indeed, it was the predominant quality of the mind of Joseph Coats that he was obliged to examine everything for himself. Papers flowed from his pen on many pathological questions, he took a large share of the work of the Glasgow Committee on Anæsthetics, he wrote much for the *Glasgow Medical Journal*, of which for many years he was the editor, and he was one of the forces in the Pathological and Clinical Society of Glasgow, a young and vigorous society which has, since its foundation, done much to intensify the scientific earnestness of the Glasgow School of Medicine.

Never very robust, with a glow of earnestness that seemed to consume the man, years and work soon told on his frame. The tall, spare figure stooped a little, the grey hairs accumulated on the temples, and his friends had some misgivings even before there was a complete breakdown. At last it came, and after a heroic struggle against an insidious disease —a malignant growth near the colon—Joseph Coats passed away.

His life work was in one sense accomplished in the founding of the Chair and of the Laboratory, and yet the active mind was full of projects for the future. The success of his well-known text-book gave him great pleasure ; since his return from a voyage round the world he printed for private circula-

tion a series of letters to his children (two daughters), in which acute observation and insight are apparent in every page; and he was also busily engaged on a new Catalogue of the Museum of the Western Infirmary, describing hundreds of preparations put up by his own hand. He had also ideas as to post-graduate instruction and as to a more thorough investigation of morbid tissues, etc., obtained from the Infirmary, so as to bring clinical and pathological work into harmony. His mind was full of notions as to developing the chemical side of pathology, as to the best means of providing instruction in comparative pathology, and as to how experimental work could best be carried on. Sanguine in temperament, he hoped much from progress, and every new pathological theory was quickly brought to the front and was submitted to a critical enquiry.

He had a clear, acute, incisive mind that went straight to the roots of things. He had a way also of turning them round and looking at them from many sides, and then came an original thought that seemed to make things plain. Once he had a clear perception of the subject he clung tenaciously to it, and it was not easy to move his opinion. He had also the faculty of sustained work, and to him rest was variety of occupation. He took a deep interest in science generally. His relaxation was found in literature and music, and, during the summer season, there was no more delightful companion by wood and field and sea-shore.

Dr Lewis Sutherland, who, by long association with Dr Coats, is well qualified for the task, has favoured me with the following estimate of Dr Coats as he appeared in the lecture room, in the laboratory, and in the pathological museum.

"As a pioneer in pathology in Glasgow he occupied a unique position, and for that very reason it is very difficult to 'place' him and to contrast him with the pathologists of the day. He was the type of the Scottish pathologist—a pathological anatomist rather than an experimental pathologist. This was partly the outcome of his training, but mainly perhaps the result of his environment. In his work in the Royal and and Western Infirmary the experimental side of his science had, for obvious reasons, to be kept in great part in the background, and he thus became, almost perforce, a morbid anatomist. His close association with the Hospital, as an assistant-physician, only tended to bias him still further in this direction,

while at the same time it gave his lectures and demonstrations a living clinical interest.

"He very strongly advocated the necessity of constantly bearing in mind this close association of the clinical with the pathological. This was abundantly evident in his teaching. He made it a rule, for example, that no specimen was placed on the shelves of the Pathological Museum, unless, at the same time, some clinical particulars could be appended to the description of the specimen in the catalogue. He thus sought to link the museum very closely to the ward.

"So impressed was he with the importance of acquiring an intimate knowledge of the *actual* 'warp and woof' of disease, by careful examination of the morbid products of the *post-mortem* room, that for many years he was, to a certain extent, averse to the use of pictorial illustration in teaching, especially to anything approaching a diagramatic representation of disease. These 'aids' he considered responsible for many misconceptions on the part of students. Later in life he modified his views on this subject, and eagerly availed himself of the advantages offered by microphotography and by the projection-microscope, for purposes of demonstrative teaching.

"In his teaching he always bore in mind that his students were future medical practitioners, not future pathologists, and without in any way unduly magnifying his office he insisted on the supreme importance of a thorough and practical knowledge of pathology on the part of every practitioner of medicine.

"As a pathological anatomist he showed very singular facility in the interpretation of morbid lesions, simply by naked-eye inspection. This faculty, born of long-continued and close observation, appeared sometimes almost intuitive. On looking at a lesion at an autopsy he seemed at times, from the minute detail of his description, as if he were actually seeing the microscopic alterations in the diseased organ or tissue. The more intricate and complex the changes under observation the more evident became this power. Slowly but surely he would unravel the tangled skein, assigning to each process its proper place in point of importance, and in point of time, and thus he would present to his hearers a logical, convincing and withal simple interpretation of what had previously been vague and confused. His appreciation of the *relative* value of morbid phenomena was indeed one of his most enviable possessions.

"In the Laboratory his methods were the simplest. He worked at his table with the rapidity of a skilled investigator, deft in all his manipulations and orderly and systematic in all his ways. He wrote without much effort, and always with some defined object in view, the result being that his numerous and varied contributions are all of much value. Many of his papers are authoritative. This is particularly the case with regard to his writings on tuberculosis, cancer, atheroma, etc., while his thoughtful additions to the literature of heredity and immunity have a permanent value."

Of Dr Coats' personal character the best we can say is that he was a true man. He was manly; he had a hatred of shams and pretensions; he was lovable and gentle with his friends; and he always gave one the impression of intense moral earnestness. To an outsider he might appear to be cold and reserved; he sometimes seemed a little hard in his judgments; his very earnestness and clearness of mental vision occasionally gave one the impression of narrowness; but all these impressions were modified when we knew the man better. He was notably one who grew in the esteem of his friends, and esteem deepened into affection.

He was a devout Christian, who cherished his faith and could give a reason for it. A loyal adherent of the Baptist Church, he had, at the same time, a broad and Catholic spirit, and he looked forward to the day when the Kingdom of Heaven would be on earth. Altogether, Joseph Coats was a man of a noble type; he made his mark on his generation, and his memory will be long cherished, more especially by the students of the University of Glasgow and by the colleagues who now mourn his loss.

J. G. M.

Professor William Rutherford, M.D., F.R.S.

WE regret to have to chronicle the death on Tuesday morning, the 21st February, of Professor Rutherford, of the Chair of Physiology in the University of Edinburgh. In our next number we hope to give a notice of his position as a physiologist and a teacher.

Scottish Medical News

ROYAL COLLEGE OF PHYSICIANS, EDINBURGH, ROYAL COLLEGE OF SURGEONS, EDINBURGH, AND FACULTY OF PHYSICIANS AND SURGEONS, GLASGOW.—The quarterly examinations of the above board were held in Edinburgh in January, with the following results :—

First Examination, Four Years' Course.—Of seventeen candidates the following five passed the examination :—John Lang Niven, Shanghai; Robert Shenton, Derby; Thomas Lynas, Belfast; Robert Elliott, Manchester, and Samuel Robinson, Ireland, and one passed in division of Elementary Anatomy and one in Chemistry.

First Examination, Five Years' Course.—Of twenty candidates the following twelve passed the examination :—Thomas Joseph M'Kaigney, Londonderry; James Hart Sutherland, Stirlingshire; Michael Valentine Shanahan, Cork; John Henry O'Sullivan, Galway; Richard Lewis, Portmadoc; William Sam Rainey Dick, Ballynafie; John William Cross, Houghton-le-Spring (with distinction); Roger Llewellyn Williams, Mountain Ash, South Wales; James Alexander Whitla, Monaghan; Herbert M'Master, Donaghadee; Henry Doig, Glasgow (with distinction); Peter Watt, Tinwald, Dumfriesshire; and one passed in division of Physics.

Second Examination, Four Years' Course.—Of twenty-four candidates the following ten passed the examination :—John Wilson Dickson, Tyrone; Alfred John William Noble, Aberdeenshire; Robert Paterson, Ayrshire; James Ebenezer Boon, Kirkcaldy; William Dunseith Dickson, Co. Tyrone; Barclay Brook Head, Kent; Kenneth Rhodes Devargnes Shaw; Edwin Robert Thomas, Dowlais; William Boyd, Kilrea; Henry John Clague; and one passed Division of Anatomy and one in Materia Medica.

Second Examination, Five Years' Course.—Of thirty candidates the following sixteen passed the examination :—Patrick Carroll, Kildowery, Ireland; William Brown Heagerty, Cork; Ethelbert Hearn, Kent; Angus M'Innes, Old Kilpatrick; Harold Weston Young, London; Frederick Alexander Georgeson, Wick; Frederick Charles Willmot, South Africa; John Morton Morton, Glasgow (with distinction); James Smith Colquhoun, Durham; William Charles Massy Burnside, Belfast; Daniel M'Intyre, Littleborough; John Philip Cameron, Bungalore, India; Kallyani Pado Chatterjee, Calcutta; William James Healy, New South Wales (with distinction); Anthony Hagarty Corley, Dublin; John Kean, Newry; and one in Division of Anatomy.

Third Examination, Five Years' Course.—Of twenty-five candidates the following fifteen passed the examination:—John Blunt Swinden, India; Henry Francis Stilwell, England; John Thomson Kilpatrick Thomson, Glasgow; Frederick William Kerr Tough, Aberdeen; Albert Edward Ward, Glasgow; William Airlie Ogilvy, Cambuslang; Philip Harry Parsons, Essex; William Donovan, Blarney, County Cork; William Arthur Benson, Durham; Edith Anna Wynne-Edwards, Montgomery; Charles Russell Sutherland, Durham; William John Morgan, Wales; Mary Birrell Davies, Liverpool; William Arthur Dawson, Bandon; George Evans, County Derry; and one in Division of Anatomy.

Final Examination.—Of one hundred and one candidates the following fifty-three passed the examination and were admitted L.R.C.P.E., L.R.C.S.E., L.F.P. & S.G.:—Joseph Parker Woodhouse, Stockport; Arthur Clarence Turner, Copake; Francis Clayton Gould, Hales Owen; John Kitton Howlett, Norwich; James Vincent Watson, Darlaston, Staffs.; James Ross, Ballymena, Co. Antrim; Thomas Lancelot Wyndham, Surrey; William Lloyd, Carmarthen; Thomas Alexander Chalmers, Ayrshire; Ellis Owen Jones, Bethesda; Frank Rowland, Birmingham; William Charles Edmund O'Donahue, Dublin; Charles Abbott, Leeds; James Hamilton Fleming, Avonvale; John Francis Dwyer, County Cork; Jacob Medley Wood, York; Ernest Alexander Campbell, Aldershot; Herbert Midgley Cockcroft, Masham, Yorks.; George Yeoman, Osmotherley, Yorks.; John Herbert Gibbs, London; Charles Frederick Graves, London; Edward Lewis Nathaniel Hopkins, Carmarthen; Alfred Myles Staunton, Ireland; Mary Ariel Stewart, Portishead; John Cummane Danaher, Limerick; Michael Halpenny, Ardee; Herbert John Beven, Ceylon; Henry Fowler, London; William Roper, Bridport; William Marley Cass, Durham; Samuel Rees, Trefrin; Elsie Rosa Cresswell Taylor, Tunbridge Wells; Frederick Morton Black, Broughty Ferry; Thomas Richard Webster Atkins, Cork; John England Kerr, Inverness; Frederick Patrick Walsh, County Cork; Paul Johannes Van-Coller, Cape Colony; Kristnalal Datta, Calcutta; Gervas Parnell, London; Francis Puis Lauder, Bombay; James Barkley, Maghera; Francis Edward Dowling, Cork; Donald Ferdinand Schokman, Colombo, Ceylon; Reginald Cecil Morley Hoare, Birmingham; Caris William Iliffe, Derby; Andrew Francis Craig Gilmour, Linlithgow; Edmond Walsh, Limerick; John Timothy Buckley, Ireland; Cyril Hermann Bürger, Jamaica; Lydia Prio Datt, Nepaul; Timothy Joseph O'Donovan, County Cork; John Patrick Corcoran, County Mayo; John George Blantyre, Gowlland, Sydney; and one in Division of Medicine and Therapeutics.

WOMEN ON HOSPITAL BOARDS.—Glasgow has been much exercised during the past few weeks over one of the innumerable phases of the Woman Question. Shall we have woman directors on the Boards of our large general hospitals? The initiative in the form of an affirmative reply is believed to have emanated from an influential university centre whose sympathies are well known to run in that direction, but so far as the Western Infirmary is concerned by the time the matter had assumed the form of a definite proposal, the two lady candidates found that their opportunity, for this year at least, had gone past.

But in the case of the Royal Infirmary it was otherwise, and due notice having been given of the intended movement, a large number of subscribers put in an appearance at the annual meeting on 30th January last, including a fair representation of ladies. When the matter came up for discussion, what we might call an *ex cathedra* motion was at once made by the Board itself, when the Chairman of the House Committee and the Treasurer moved and seconded the election of two gentlemen in room of the two managers retiring by rotation. Then most appropriately the gallant and hon. member for the Kilmarnock Burghs, Col. Denny, rose and proposed the names of two ladies who are well-known for their good works, and the motion having been seconded, the vote was taken by ballot, when it was found that the ladies had only secured 26 votes each as against 85 and 83 for the gentlemen. There was on the one hand a pretty general opinion that women should be represented on the Board of a hospital having so many nurses and female patients, but it was held on the other hand that this was not necessary in the case of a hospital with a capable and experienced matron. And again it was whispered about by those who knew, or said they knew, that women on Boards are not a success.

In this connection it may be mentioned that there are two ladies on the Board of Management of the Edinburgh Royal Infirmary, and it is generally understood that their presence there has been of service to the Institution.

APPOINTMENT OF DR G. SIMS WOODHEAD TO THE CHAIR OF PATHOLOGY IN CAMBRIDGE.—It is with much pleasure that we congratulate Dr Woodhead on his promotion to Cambridge. Dr Woodhead was so long with us in Scotland that we almost regarded him as a Scot. As a pathologist he is fully entitled to such a post as Cambridge; and we look for much useful work from him in his new position, which must leave him with more leisure and fewer distractions and interruptions than he must, we presume, have been surrounded by in London.

New Books and New Editions

The Diseases of the Lungs. By JAMES KINGSTON FOWLER, M.A., M.D., F.R.C.P., Physician to the Middlesex Hospital and to the Hospital for Consumption and Diseases of the Chest, Brompton; and RICKMAN JOHN GODLEE, M.S., F.R.C.S., Fellow and Professor of Clinical Surgery, University College, London, Surgeon to University College Hospital and to the Hospital for Consumption and Diseases of the Chest, Brompton. 8vo, pp. xv. 715, with 160 illustrations. London: Longmans, Green & Co. 1898. Price 25s.

THIS is a well-conceived and practical treatise on diseases of the lungs and pleura. It affords an interesting illustration of the recent trend of medical science. Not very long ago joint-authorship on the part of physician and surgeon of a book relating to any of the viscera would have been meaningless. Within a marvellously short time such collaboration has become a matter of everyday occurrence. Surgery of the lungs is now well within the realm of practical therapeutics. In the interest of the patient, therefore, it is of the first moment that there should be available to the practitioner, in readily accessible form, a sufficiently comprehensive survey of the possibilities and limitations both of medicine and surgery in this department. This has been the standpoint from which the work before us was conceived; and the thoroughly practical aim has been satisfactorily attained.

As might be expected, the major portion of the volume has been contributed by Dr Fowler, but the authors have read and discussed each other's work. This gives added value to the treatise as an accurate register both of the high-water mark of advance and of the conditions which limit the realisation of what, in some circumstances, may be possible.

The anatomical chapter which prefaces the others is from the pen of Mr Godlee, and is in every way admirable. No better compendium of the subject will be found anywhere. The succeeding chapter on physical diagnosis is less happy. Its faults, if such they may be termed, only accentuate the view which Dr Fowler himself expresses, that it is a great pity some common terminology has not been adopted in the description

of phenomena which are well recognised. It is high time that we should speak the same language in describing our results. But whose language is it to be? The chapter before us evidences the difficulty which the question raises. While many of the statements will be admitted as common property, we think a good deal is highly questionable. Thus, to describe vesicular breath sound as of "blowing" quality is to introduce a conception which is liable to lead to much confusion. If any breathing be characteristically "blowing" it is assuredly the bronchial (whether it be the commonly occurring bronchial or the closely allied tubular, or the cavernous). This confusing tendency is practically illustrated when, in tabular form (p. 61), the author proceeds to compare the types of breathing, and, under the heading "quality," describes both "vesicular" and "cavernous" as "blowing." Then the sharp distinction drawn between crackling and bubbling râles, in respect of causation, seems artificial. The one variety of accompaniment merges into the other at different stages of the patient's progress. As to the term "crepitation," the author remarks that it should be strictly limited to the fine accompaniment recognisable commonly at the end of inspiration in the early stage of pneumonia. This is hopelessly at variance with the current teaching at some of the largest medical schools, where the term "crepitation" is accepted as a synonym for what are elsewhere termed râles, and "crepitations" are accordingly classed as fine, medium and coarse. We confess to a preference for the latter terminology. It would, indeed, be a great gain if we could get the length of a common alphabet at least.

The diseases are discussed systematically, commencing with affections of the trachea and proceeding thereafter with those of the bronchi, lungs and pleura. Each chapter is prefaced with a convenient index to the subsequent pages, and the contents of each chapter are placed in methodical sequence. This enhances the value of the work as a book of ready reference. The chapters on bronchitis are excellent. Attention is wisely drawn to the frequent incompleteness of diagnosis in respect of chronic bronchitis. This might be advantageously pressed further. Chronic bronchitis is comparatively seldom an ultimate diagnosis. It is unhappily too easy to obtain physical grounds for diagnosing chronic bronchitis, and errors of omission are very frequent. An attempt ought always to be made to get

a step further back. This can usually be effected by greater minuteness of physical examination in conjunction with a scrutiny of heart vessels and kidneys. The same reflection applies to the diagnosis of emphysema. What curious revelations are sometimes made at the autopsy of a patient reported to have died of emphysema!

Several chapters are devoted to pneumonia, and these are both instructively and pleasantly written. Perhaps it may be suggested that the conception of pneumonia as a local lung process is too conspicuous, although the author safeguards himself by accepting a definition which is wider. The section on prognosis might be expanded advantageously. More emphasis should be laid on the state of the pulse and circulation as a guide to prognosis from day to day. In respect of treatment, it is unwise to insist on a temperature of 65° F. Under the usual condition of the sick-room it is not easy to maintain a constant temperature of 65° F. without sacrificing freshness of atmosphere, which is desirable when so formidable an interference with hæmatosis exists.

Pulmonary tuberculosis is discussed in nine chapters. The name phthisis is wisely discarded. The pathology of tuberculosis is discussed at considerable length. The writer, while accepting the ordinary doctrine of infection, expresses his belief that evidence will accumulate in favour of the view that in certain cases the virus is directly transmitted from the parent. The actual cause of death in tuberculosis receives scanty attention. A short chapter on the varieties of the disease only serves to accentuate the difficulties of the attempt to present a classification. The succeeding chapter on pyrexia in tuberculosis is interesting, but has been unnecessarily hampered by the attempt to conform to the classification accepted in the foregoing chapter. The following chapters, in which the four admitted varieties are separately described, suffer from the same cause. The division seems neither scientific nor practically helpful. The sections on the site and progress of the lesions are interesting, and recapitulate Dr Fowler's valuable observations on this subject, published a number of years ago. In respect of prognosis in chronic tuberculosis, stress should be laid more definitely on the state of the pulse. Investigations as to the cause of death in tuberculosis and the action of tuberculin suggest the importance of this.

The chapters on syphilis and actinomycosis are exhaustive and fresh. Diseases of the pleura are well presented, and the subject of treatment of this most important section is enriched by several chapters from the pen of Mr Godlee, which are excellent.

The work is nicely got up and well illustrated. Here and there the illustrations seem to have been introduced with little reason. Thus a front and back view of a patient suffering from actinomycosis serve little purpose and might be advantageously omitted. Proper names have suffered considerably in respect of spelling, *e.g.* Baccelli, Görbersdorf, which appear in distorted fashion. These are, however, minor blemishes, easily rectified in the second edition, which is certain to be called for quickly.

A Text-book of Practical Therapeutics. By HOBART AMORY HARE, M.D., B.Sc. London: Henry Kimpton. 1899. Seventh edition, royal 8vo, pp. 776. Price 21s.

THE seventh edition of this well-known book deserves a warm welcome. It is one of the very best contributions made to what may be called the American School of Therapeutics; and that this edition was called for within a year of the appearance of its predecessor is a fact which requires no comment. Dr Hare is to be congratulated on so promptly embodying the chief alterations of the new British Pharmacopœia, and in otherwise bringing the book thoroughly up to date. In general arrangement there is no departure from that of former editions; and indeed a critical review of a seventh edition is almost superfluous. To touch on one or two points, however, we would draw attention to the fact that the difference in dose arising from difference in strength of preparations of the same name on both sides of the Atlantic appears to have been overlooked; and therefore in the case of some of the more powerful remedies, such as nux vomica and strophanthus, the British practitioner, working with preparations of British pharmacopœial strength, would do well to keep this in mind.

The chapter dealing with remedial measures other than drugs, a subject so often omitted from works of this kind, is a most valuable one, for it gives a very clear description, aided

by illustrations, of the technique of transfusion, of the application of heat and of cold, of counter-irritation, of the notoriously indefinite question of disinfection, and so on.

In Part II. the therapeutical indications given under each drug are, on the whole, very well put; chloroform is specially well done. With regard to the indications for strophanthus we think much more might have been said, and that too in favour of a wider sphere of usefulness. Again, the statement that bone marrow has proved futile in pernicious anæmia is certainly not in accordance with the results obtained by eminent observers in this country. In this country, also, it is now considered unwise to give such a large dose of acetanilide as eight grains. But these are details, and we have no doubt that this edition will prove as great a success as its predecessors.

A Manual of Surgery for Students and Practitioners. By WILLIAM ROSE, M.B., B.S.Lond., F.R.C.S.Eng., Professor of Surgery in King's College, London, and Senior Surgeon to King's College Hospital; and ALBERT CARLESS, M.S.Lond., F.R.C.S. Eng., Senior Assistant Surgeon to King's College Hospital, and Teacher of Operative Surgery in King's College, London. London: Baillière, Tindall & Cox. Demy 8vo, pp. 1162. 1898. Price 21s. net.

THIS manual is intended mainly for those reading for examinations, but, at the same time, the requirements of the general practitioner have not been overlooked. The authors state in their preface that they have, in preparing the manual, endeavoured to meet what they consider to be a genuine need.

It is not an easy task to write a text-book on modern surgery intended mainly for the student. On the one hand, to deal fully with the subject is to ask the reader to get up facts and details which merely serve to overburden his memory, even did time permit of his endeavour to do so. On the other, it is often unsatisfactory, and indeed difficult, for the author to compress into a convenient space the immense amount of material with which he has to deal, and, at the same time, to avoid writing a book the contents of which have to be crammed up.

We have read this book from cover to cover and consider that Professor Rose and Mr Carless are to be congratulated

upon the satisfactory manner in which they have accomplished the task they set themselves to perform. The book is one which the average student ought readily to master by systematic reading, and, while forming a comprehensive work on modern surgery, it is convenient in its size.

Surgical pathology is brought well up to date and is dealt with adequately for the scope of the work. The chapters on wounds and their treatment—notwithstanding the rather summary dismissal of aseptic methods—on injuries and diseases of blood-vessels, and on nerves are all good.

The descriptions of injuries and diseases of bones, and of joints are decidedly modern and are some of the best in the book. The importance of massage in the treatment of fractures is duly emphasised, and the ambulatory treatment referred to. Wiring of the fragments in fracture of the olecranon is spoken of as the most satisfactory plan to adopt; we are, however, very doubtful if the general practitioner who was not prepared to open into the elbow joint, and who employed the retentive apparatus described, would conduce towards the comfort of his patient. The description of the operative treatment of fracture of the patella is excellent. We do not agree with the authors as to the necessity for draining the joint after the removal of a semilunar cartilage, and still less do we consider that in such cases even "as an additional precaution against infection it may be as well to immunise the patient by the preparatory injection of antistreptococcic serum."

Deformities are dealt with thoroughly and practically, although perhaps a little unequally, for while coxa vara and metatarsalgia are described, we can only find a passing reference to hallux rigidus.

Abdominal surgery is brought well up to date, and the section on hernia is excellent in every respect.

The chapter on head injuries is good although somewhat condensed ; that on the surgery of the scalp, skull and cranium is printed in small type ; it is, moreover, scarcely up to the same standard of excellence as the rest of the book, and the same may be said, in some respects, of the sections which deal with genito-urinary surgery.

Much of the space devoted to operative procedures such as the ligature of arteries, excisions and amputations, might with advantage have been used in some other way and a type of

uniform size employed. References have, in order to economise space, been to a large extent omitted.

The book is clearly written, well arranged, and fully illustrated—the value of the X rays in surgical diagnosis being emphasised by the introduction of several excellent skiagrams—and is one which we can cordially recommend. The busy practitioner will find it reliable, succinct, and, on the whole, well up to date, while for the average student, we know of no better text-book on surgery.

Traumatic Separation of the Epiphyses. By JOHN POLAND, F.R.C.S. Roy. 8vo, pp. 926, with 337 illustrations and skiagrams. London: Smith, Elder & Co. 1898. Price £2, 12s. 6d.

WE confess that we had never adequately realised the importance of the subject of traumatic separations of the epiphyses till we met with the portly volume now before us, and if we may judge by the attention devoted to the subject by the writers of even our most modern text-books on surgery, we are not alone in our want of appreciation. Henceforth there can be no excuse for any surgeon remaining in ignorance of this subject, because Mr Poland has, with what must have involved enormous labour, provided for us a perfect treasury of information culled from the voluminous but scattered literature which has gradually been accumulating since Hippocrates made the first allusion to this, as to so many other subjects. We do not mean to suggest that the work is merely a compilation of the literature extant on the subject, because it contains extracts from, and critical references to, all that has been written heretofore. This is by no means its smallest claim to our gratitude, but its chief value lies in that it embodies the opinions and experience of one who has not only had exceptionally wide opportunities for observation, but has devoted an amount of attention and labour to the subject which far exceeds that of any other writer. This is true not only with reference to the purely surgical aspect of epiphysial separations, but also to the anatomy of the epiphyses, which, by dissection and also to a very large extent by the aid of the Röntgen rays, have been studied, and to a certain extent described, afresh. Many familiar facts regarding the appearance, development and ad-

hesion of the epiphyses are retailed, but not a few new points are here enunciated for the first time.

The author agrees with Ollier that the term "diaphysial separation" would more correctly convey the pathological idea regarding these injuries, as it is the diaphysis which leaves the epiphysial cartilage, and not the epiphysis, but he hesitates to change a term which is now so generally understood lest confusion might arise.

Until within the last twenty years the subject of injuries in the vicinity of epiphyses had attracted attention chiefly among French and Italian surgeons, and even they failed to realise the true import of such lesions, till Ollier in 1867 put the subject on a sound basis. In this country, Mr Jonathan Hutchinson, Sir George Humphrey, John Hilton, and a few others have added much to our knowledge, but even yet, as the author points out, very contradictory opinions are held as to their nature, frequency of occurrence, and clinical importance by different surgeons.

A very interesting and instructive chapter on the anatomy of the epiphyses throws much light not only on this particular class of surgical injuries, but also on the morbid anatomy of various other traumatic and inflammatory conditions affecting the ends of long bones in children. Some excellent radiographs illustrate this chapter.

Referring to the etiology of epiphysial separations, while the author believes that the causes which produce these lesions are the same as those of fracture, only as a rule more severe, he looks upon epiphysial separation in the child as the analogue of dislocation in the adult. It is not to be forgotten that not a few cases of separation of epiphyses, especially when induced by slight violence, are attributable to diseased conditions, either general or local.

Indirect forms of violence, especially such as combine torsion with traction, are the commonest causes of diastasis. Muscular violence is a common cause in such situations as the lesser trochanter of the femur, the anterior superior iliac spine, the head of the fibula, etc.

It would appear that our previous ideas as to the age at which diastases occur are not accurate. Extended statistics seem to indicate that most of these lesions occur between the ages of eleven and eighteen, but of course this varies with

individual epiphyses, and it must be remarked the statements throughout the book are not consistent on this point. The male seems to suffer more frequently than the female from this form of injury.

A short chapter deals with the relative frequency of separation in different regions ; and this is followed by a full discussion of the pathological and histological anatomy and mechanism of these injuries.

In the chapter on Symptoms and Diagnosis a distinction is made between separations with displacement and those without displacement, and special emphasis is laid on the danger of confusing the latter with sprains, a diagnostic error which may lead to serious mistakes in treatment, and disappointment with the results obtained. The author says, we fear with much truth : "There is no doubt whatever that numerous instances of epiphysial separation are overlooked—a great many cases treated without any attempt at an exact diagnosis being made." This is to be regretted, because, even if it be true that the general lines of treatment in the two classes of injury are very much alike, there are certain details of treatment, as well as questions of prognosis, in which they materially differ.

The chapter devoted to prognosis and ultimate results is one of particular interest and value, to which we must refer the reader for details ; suffice it here to say that interference with the growth of the bone in length is by no means so common as many writers would lead us to suppose.

The general part of the work finishes with a chapter on treatment, in which the importance of immediate and complete reduction by the aid of anæsthesia, or even of operation if necessary, is advocated.

The second part of the volume is devoted to a detailed study of separation of individual epiphyses, under the headings of Normal Anatomy, Etiology, Age, Pathological Anatomy, Symptoms, Diagnosis, Prognosis and Treatment. Each point is illustrated by instructive cases, and by drawings and skiagrams, which go far to add to the interest as well as the educative value of the text.

The references to literature both throughout the text and in an appendix are most voluminous, and will be found invaluable to any investigator in this subject—if indeed the writer has left any ground for future workers to traverse.

A copious index renders the work easily consulted by the general surgeon in search of information, and we may confidently assert that none will seek in vain for anything that is at present known on the subject of epiphysial separation.

The publisher's work has been done in a manner worthy of the text, which is sufficient praise.

Skiagraphic Atlas, showing the Development of the Bones of the Wrist and Hand, for the use of Students and others. By JOHN POLAND, F.R.C.S. Royal 8vo, pp. 40, with 19 skiagrams. London: Smith, Elder & Co. 1898. Price 5s.

THIS small work is a reprint of the anatomical description of the bones of the hand and wrist taken from the author's large work on "Traumatic Separation of Epiphyses," reviewed above, with an excellent series of radiographs illustrating the development of the epiphyses in the region of the wrist and hand.

As an isolated record of one observer's experience in the Röntgen photography of this region, the illustrations are both interesting and valuable; but we feel that a large number of such plates must be made and compared before general deductions as to the time at which the different epiphyses appear and are completely ossified can be reliable.

A Clinical Text-Book of Surgical Diagnosis and Treatment. By J. W. MACDONALD, M.D., Professor of the Practice of Surgery and of Clinical Surgery in Hamline University, Minneapolis, etc. Pp. 798, with 328 illustrations. London: The Rebman Publishing Co. (Ltd.), 1898. Price 28s.

THIS large text-book is dedicated to Dr Joseph Bell, and that is its chief claim to distinction. It is to be regretted that the name of so distinguished a surgeon is not associated with a worthier book.

The title of the volume, and the indication of its nature in the preface, are certainly attractive to some; for we read in the latter that since the principles of surgery, of surgical pathology, and of bacteriology are to be found elsewhere, the author will confine himself to diagnosis and treatment—"a single volume containing the most practical part of practical surgery."

"This is just what I want," exclaims the busy practitioner; "no principles, no pathology, but a clear indication of diagnosis and treatment." Let us see how his expectations would be gratified.

The vascular system is first discussed. On p. 23 we find a description of the operation for tapping the right auricle in distension of the heart from pulmonary congestion. The operation is described in a short paragraph in a manner that suggests it is as frequently performed as, say, tapping the pleura. It is admitted to be dangerous, but there is no indication of the number of times it has been performed, nor of the results. Of course, if the practitioner is to follow Dr Macdonald without reasoning, this may be enough; but in that case why describe the operation at all in this "practical" book? And what guidance can a practitioner obtain from the following paragraph, which is all that is offered on the important question of the radical treatment of varicose veins? "Radical measures include the following: Exposure and ligation of the vein, subcutaneous section with compression, multiple subcutaneous ligatures," etc., etc., a mere catalogue of operations, obsolete and useful indiscriminately mixed. On the next page, the good axiom, "Never be afraid of a bleeding point when you can place your finger upon it," is spoiled by the addition, "not a dirty, but an aseptic finger." Must the finger be asepticized before it is applied to the arrest of dangerous hæmorrhage? The quite inadequate lines which deal with the surgical treatment of aneurism (p. 34) read like an extract from some "Students' Aids to Memory," and furnish almost no guidance as to the relative value of the various procedures. On the other hand, the question of the diagnosis of aneurism is well treated.

In the chapter on the Osseous System, the section dealing with fractures is clear, concise, and practical, though there is a strange disregard for more recent methods, as, for instance, in the advice to keep the knee rigid for eight weeks after fracture of the patella. What of the excellent results gained by the "Dutch" method of massage and daily movements begun at once?

In the next chapter, a ganglion is said to be "a cyst containing the synovial fluid, but generally changed to a jelly-like consistence." A work which excludes pathology need not have committed itself to any theory of the contents of a ganglion,

but the idea that it contains synovial fluid has long been abandoned. But much more serious is the absolute confusion with regard to compound ganglion and tubercular tenosynovitis. There seems to be no apprehension of the fact that for years the two diseases (as the author regards them) have been considered one and the same, and that the modern treatment of "compound ganglion" by free skin incisions and removal by dissection of all tubercular tissue from the tendons has, in many cases, been followed by brilliant results.

But what is to be said of a "practical" book of nearly 800 large pages which omits even to mention the ordinary method of suturing a ruptured gastric ulcer, which dismisses all operations except castration for undescended testicle as useless, which "especially" recommends for tubercular epidydimitis "residence at the seaside, or a long sea-voyage," dismissing the whole subject of treatment in half-a-dozen lines, and which passes from a discussion of the means of ascertaining the probable source of the blood in hæmaturia, without even suggesting the use of the cystoscope?

On the other hand, the chapter on the Surgery of the Head is excellent, and there are other good chapters, including those on the Spine, the Respiratory System and Syphilis; while the illustrations throughout the book are both abundant and admirable.

Of the two questions which the author set himself to answer, the discussion of the first is, in most cases, not inadequate; but the defects in the answer to the second—"What is the proper treatment?"—are so numerous and so serious that this book cannot be recommended.

Ovariotomy and Abdominal Surgery. By HARRISON CRIPPS, F.R.C.S., Operator for Abdominal Sections to the Ward for Diseases of Women in St Bartholomew's Hospital, etc. Roy. 8vo, pp. x. 624, with numerous plates. London: J. & A. Churchill. 1898. Price 25s.

IT is a matter for congratulation that an operator of the extensive experience, the sound surgical judgment and the healthy therapeutic instinct of Mr Harrison Cripps should have formed the

resolution to give the benefit of that experience and judgment to the profession at large, but it is less certain that Mr Cripps is to be congratulated on the embodiment which he has succeeded in giving to his resolution. The text of the volume consists of a more or less systematic discussion of the surgical conditions of the abdomen with the diagnosis and treatment, and furnishes repeated illustrations of the soundness and common-sense character of Mr Cripp's practice. Thus we find that in operating he allows the intestines to come out and lie under a pad rather than handle them too freely in retaining them; that, restricting drainage more and more in ordinary cases, he drains the broad ligament to the vagina in cases of communication between the intestine and a cyst, and that he recommends leaving the placenta in full-time ectopic pregnancy, while his discussion of mechanical obstruction of the bowel after an operation and of obstruction generally is typically well balanced. It would of course be easy to cite many points of practice for disapproval, but it is needless to do so. Dissent must however be entered from the diagnosis of malignant ovarian tumours by the accompanying ascites, for though it may be true that ascites is proportionally more common in cases of malignant tumour it is equally true that the large majority of ovarian tumours accompanied by ascites are not malignant.

In the case of an author so scholarly as to be able to talk of the Fallopian arch, even in a borrowed description, it is somewhat disappointing to find that, in addition to many inaccuracies of style, such as "that the tumour is not formed *from* the bladder," "for a patient in *which*," he has allowed his printer such liberties as "pyr*o*form," "tr*e*beculæ," "fal*s*iform," "Vol*c*kmann," "pe*a*led off," and that he himself has omitted to state the scale of his illustrations even where it is necessary (Plate XIV.).

Apart from the suggestion of the almost too luxurious type, which it is perhaps ungrateful to mention, the volume contains many signs of book-making, probably in the interests of the friends whom the author so generously names. The profusely illustrated chapter on anatomy fails to justify its inclusion by providing anything of special interest or novelty, while its successor, the description of theatre and apparatus, contains much that is already the common property of all surgeons, and which, especially in the matter of illustration, might safely have been

left in the instrument maker's catalogue. The description of Alexander's operation is dragged in, with an apology it is true, but there is no justification for borrowing from Doran the figure illustrating a method which the author disapproves, or for detailed descriptions of methods which he has rejected, on the chance that others may wish to try them. The appendix, containing short reports, not always adequate, of the cases which Mr Cripps considered most interesting, does not fail to attract the reader, and the elaborate index makes reference to the volume a matter of great comfort.

A Clinical Treatise on Diseases of the Breast. By MARMADUKE SHEILD, M.B. (Cantab.), F.R.C.S. London: Macmillan & Co. 1898. Price 15s.

AS the title of this work indicates, the subject is treated from a clinical standpoint, which necessarily involves both anatomical and pathological considerations. The anatomy is too briefly stated, and although reference is made to the work of Haidenhain and others it would have been advisable that it had been more fully detailed, and greater emphasis placed upon the importance of its recognition by the surgeon. Nowadays it is admitted by the majority of modern surgeons that free removal, not only of the diseased portion but of the whole gland, is required to meet with the success which has attended operations of complete excision for carcinomatous disease. The author refers to this and in effect advocates thorough removal, but he fails to bring the importance of the procedure tersely before the reader. Much space, comparatively, is occupied by the repetition of the importance of aseptic treatment, but had this been more concisely stated at one part of the book it would have been more impressive and saved space. Surgeons know that aseptic treatment is imperatively required in the various operations described, and it is unnecessary to have a description, however short, of the means adopted at different places in the book.

Numerous cases are quoted, sometimes at length, to illustrate the varied affections. These cases are given immediately after the clinical or pathological description of the disease, and

this plan is preferable to placing them at the end of the chapter ; but it would have been convenient to have summarised, in larger and different type, some of the more typical to attract attention to them as of importance. To read cases in detail is tedious, and it is only in exceptional circumstances that the reader does not skip them. The case quoted (p. 136) as an exception to Colles's law seems unnecessary and the inference is of questionable accuracy.

From the clinical standpoint in the description and treatment of the diseases of the breast, Mr Sheild has done excellent work, and has brought before the profession much valuable personal observation. The chapters on Acute Mastitis and upon Diseases of the Nipple are especially good. The measures he advises for prevention of abscess are sound, and the consideration of Paget's Eczema of the Nipple is judicial and fair. This can also be said of *Chronic Mastitis*, in which the points in differential diagnosis and the cautions as regards operation are most clearly stated.

Naturally in such a work as this, much the larger space—200 pages—is devoted to the consideration of Carcinoma of the Breast. The statistics quoted are of interest, and the subject generally is fully discussed. The rules laid down at pages 392 and 417 are those usually followed. Plate xvi. might have been amplified, and it is surprising that no mention is made of the triangular incision, as an addition to the ordinary ellipse in cases where the tumour is at a distance from the nipple.

The illustrations of microscopic sections want definition, and do not bring out as clearly as they should what the author wishes to show. Even the naked eye illustrations are not as well executed as they might be. The square back of the binding renders the volume unpleasant to hold, but the printing is good and easily read. Much in the work lends itself to criticism, but there is also much valuable information, although discursively expressed. We feel that Mr Sheild has done a piece of good work which reflects much credit upon himself, and will prove valuable to surgery.

Abstracts from Recent Literature

NEUROLOGY

ON THE ÆTIOLOGY AND PATHOGENESIS OF THE POST-TRAUMATIC PSYCHOSES AND NEUROSES (J. J. Putnam, *Jour. of Nerv. and Ment. Disease*, Nov. 1898, p. 769).—The principal views of the pathological anatomy and pathogenesis of post-traumatic neuroses may be given shortly as follows:—

1. They are the result simply of *shock*, mental and physical, which causes purely molecular changes in the central nervous system, especially in the cerebrum.

2. They are due, in part at least, to actual organic lesions (*e.g.* hæmorrhages, necroses, etc.) in the central nervous system, resulting directly from the trauma.

3. The physical shock may cause no gross anatomical nerve lesion, but finer changes either in the blood-vessels of the brain (*e.g.* arteriosclerosis or arteritis obliterans) or in the nerve tissue itself (*e.g.* fine disintegration of the medullary sheath of fibres): these are held by different authors to be the sole or chief cause of the neuroses.

4. Some believe that a great part in the pathogenesis is played by legal complications, the desire to make out "a good case" and get damages.

5. They are the result of auto-suggestion (Charcot).

In view of such differences of opinion, it may be interesting to hear the results of Putnam, deduced from the careful observation of upwards of two hundred cases. This subject, moreover, offers so many problems, of practical interest and everyday experience, that a somewhat detailed digest is given.

Putnam at the outset states his opinion that "legal" causes may be important but are not the only ones.

The various causes of post-traumatic neuroses and psychoses have one common result, viz., "they disturb, more or less profoundly, the normal hierarchy of the central nervous system," and the post-traumatic diseases may be defined as "expressions of the various modes by which a new equilibrium is reached" in the nervous system. According to this view, then, our task is "to discover the laws that control this process of readjustment."

The various causes of the post-traumatic neuroses are arranged as follows in the order of importance:—

(*a*) Predisposing causes:—

(1) Social.
(2) Neuropathic.
(3) Toxic (alcohol, syphilis, etc.).

(*b*) Causes operative from the time of the accident:—

(1) Emotional shock.

(2) The mental strain—not of emotional character—attendant on intense voluntary effort.

(3) Painful or disabling injuries, not sufficient to cause deep loss of consciousness, yet sufficient to inhibit the voluntary control in some measure.

(4) Injuries sufficient to cause deep loss of consciousness, such as presumably interfere with the intimate nutrition of the nervous system.

(5) Slighter bodily injuries, even down to physical contact, if of a kind to excite or increase apprehension of danger (*i.e.*, excite or intensify the psychical factors).

(6) Injuries of a kind to cause actual lesions within the central nervous system.

(*c*) Principal disorganising causes operative after the accident:—

(1) Excitements and anxieties of diverse sorts.

(2) The emotional excitements due to reproduction in memory of a past danger.

(3) The continuance of pain, and the depressing effect of internal disorders, such as sprains, uterine displacements, etc.

(*d*) Principal influences in re-establishing, on new lines, some substitute for the normal equilibrium disturbed by the accident:—

(1) Influences made possible by the impairment of innervation and vasomotor action due to the accident.

(2) Influences analogous to hypnotic "suggestion."

(3) Influences equivalent to the formation of *habit*, "*irradiation*" symptoms, "*association*" symptoms, etc.

(4) The emotional tendencies referable to the direct and indirect influence of lawsuits.

The general conclusion arrived at is that "the main causes are psychical influences of one or other sort, acting on a nervous system, which is predisposed to such affections."

Among *predisposing* influences the chief place is given not, as we should expect, to a neuropathic tendency—Putnam finds that "in the great majority" of his cases no such tendency can be detected—but to the "*social*" condition of the patient: people with a high degree of social training and cultivated intelligences are relatively exempt from the severe hysterias, even although the temperament is excitable, or even highly neuropathic. Toxic causes (*e.g.* syphilis, alcohol, etc.) do not play any considerable rôle in the ætiology.

With regard to the part played by *actual nervous lesions*, he quotes cases to show that accidents, even of moderate severity, are *capable of* causing such lesions (*e.g.*, hæmorrhages, necroses,

myelitis, subtle nutritive changes, etc.), but he holds the opinion that such lesions "play only a relatively small part in causing the typical symptoms of the post-traumatic psychoses"—this factor is "wholly subordinate to other ætiological factors." One fact in support of this view is the relative infrequency of hysteria or other neurosis as a result of injuries, often severe, received in the course of sport (*e.g.* football). If such gross lesions are ever a true cause of the psychoses and neuroses it must be either by disordering the nutrition or by acting otherwise as centres of irritation, and thus inhibiting and deranging nerve function (*e.g.*, as a result of the *pain* caused). It is important to remember that our knowledge of the power of hysteria to simulate the symptomcomplexes of gross organic lesions of the nervous system is ever growing, and it becomes increasingly more difficult to make sure of the presence or absence of actual nerve lesions in individual cases.

While, however, he believes that such nerve lesions play but a small part as direct causes of traumatic neuroses, Putnam does not deny the *indirect* influence of physical violence, even where the bodily injury is slight and does not go beyond the degree of physical contact. Such injuries act by causing or increasing the emotional tendencies of an accident—they disconcert the reason and the will, and create an apprehension of greater harm to come. Injuries of moderate severity have more influence in this direction than those which are very serious and cause acute surgical shock. Even the jars and concussions received during railway accidents are looked on as having a mainly psychical effect.

Legal complications—the desire to bring a lawsuit and get damages—certainly "intensify the illness and retard the recovery," but Putnam thinks this is only a partial cause why a larger number of severe hysterias are found in law courts than elsewhere. As a matter of practical importance, quite apart from lawsuits, severe hysteria tends to occur with especial frequency in the class of patients which forms the majority of claimants for personal damages—their "social" status and training *predispose* them to such neuroses; their lack of fixed income, dread of poverty, etc., "constitute ample reason why they should feel obliged to go to law." The question, whether the appearance of the symptoms of typical hysteria immediately after or within a few moments of an accident can be attributed to a desire for legal damages, is answered in the affirmative. Among those who from their "social status" are forced to go to law, if they can, whenever they are injured, the idea of a "lawsuit" and the vague sense of the need of "making out a good case" may exist subconsciously as a conception of great power, ready to emerge at once when the necessary condition—

an accident—is given! Such subconscious ideas seem to play a great rôle in the pathogenesis of traumatic neuroses.

Among the psychical influences which exert an injurious effect at the time of an accident and immediately afterwards, emotional excitement (*e.g.* fright) is only one; "reasonable anxiety, the exhaustion from physical and mental effort, the prostrating effects of pain, grief for fellow-sufferers," all act in the same way.

Among the agencies coming under class (*d*) (*i.e.*, that determine the form of *readjustment*, which follows the derangement due to the accident) are, in addition to the "legal" complications, chiefly the following:—

1. Some degree of predisposition, *i.e.*, there is in the affected persons a latent tendency to one or another of the typical neuroses or psychoses, which are ready to emerge in times of impairment of the normal innervation. Thus chorea or Graves' disease may appear suddenly after the shock of a fright or accident.

2. There is an influence at work analogous to "suggestion in the waking state." The half-dazed state into which people are liable to be thrown by an accident is equivalent to the half-hypnotised condition, and is specially susceptible to the reception of subconscious ideas and suggestions, such as "now go and be an invalid," or "be unable to use your arm," etc.

MEDICINE

THE DIAGNOSTIC VALUE OF RENAL INSUFFICIENCY FROM THE STANDPOINT OF CLINICAL EXPERIENCES. — Korányi, writing in the *Ungarische Medizinische Presse* for March and April, commences his paper by emphasising the necessity, in kidney surgery, of knowing the condition of the secretion of both kidneys. He quotes various recent examples to show how uncertain even at this date are the methods used for this purpose. Even cystoscopy and catheterisation of the ureters were not always sufficient to give the desired information.

Some time ago he had published certain important results, at which he arrived by diagnosing kidney insufficiency from the determination of the molecular concentration of the blood, this being done by measurement of the freezing point of the blood.

These results were as follows:—

1. *So long as the kidney is healthy, the freezing point of the blood never falls lower than* 0·56°.

2. *As soon as the kidney function is insufficient for the metabolism of the body, the stored-up products of that metabolism increase the molecular concentration of the blood, and accordingly the freezing point becomes lower than* 0·56°.

3. This sinking of the freezing point may also be brought about by insufficient breathing. This abnormality may be corrected by passing oxygen through the blood *in vitro*, whereas the passing of oxygen through the blood in the case of kidney insufficiency does not essentially modify it.

4. *A healthy kidney vicariously takes on the function of the other*, and so a one-sided kidney trouble does not necessarily lead to the production of renal insufficiency; but when examination of the blood shows renal insufficiency, we have to make up our minds that there is a disturbance of function of *both* kidneys.

He would not dare, however, to positively affirm, on the ground of such experience as he has already had, that an abnormally low freezing point in the blood was an *absolute* contra-indication to nephrectomy, but he hoped that the cases he communicated might be the beginning of the collection of sufficient material to determine the value of the procedure.

The three cases he cites are as follows :—

1. Frau A. F., forty-four, had suffered for fourteen years from periodic attacks of renal colic, after which she often passed stones as big as hazel-nuts and gravel. The pain at first was only left-sided, then began to move from one side to the other, and latterly was only on the right side. For six months a tumour had been growing in the right side of the abdomen. On admission she was found to have a large right-sided kidney tumour. The left kidney was not palpable. There was much pus in the urine. Examination of the blood showed a lowering of the freezing point to 0·65°. This meant insufficiency of *both* kidneys. It was accordingly considered probable that there was a double calculous pyelitis present.

The patient had had left-sided kidney pain at one time, but not for some years, and had it not been for the results of the blood-examination it would have been thought likely that the left kidney was now sound.

A few days later Korányi's opinion was confirmed by the onset of kidney colic with pain in the left side, after which the left kidney became palpable as a tumour the size of a child's head.

Nephrotomy was advised, but the patient would not consent to the operation, and left the hospital.

2. Frau B. J., aged twenty-two years, noticed in 1894 that a painful tumour occasionally appeared in the right side of her abdomen. This always went away again in a short time. In September 1896 the tumour appeared again, and this time remained and went on increasing in size.

She entered hospital in November 1896. She was found to have a large fluctuating right-sided kidney tumour. The left

kidney was not palpable. The amount of urine passed daily was about 2000 cm. There was a considerable amount of pus in the urine. The blood freezing point was 0·68°, and therefore, in spite of the negative evidence, disease of both kidneys was diagnosed.

The patient subsequently went back to Prof. Tauffer's Klinik, and while there developed a left-sided hydronephrosis, so that the diagnosis of a double kidney lesion was fully confirmed.

3. Dr K. O., aged twenty-five, was healthy in the beginning of February. Then he passed thrice in succession red-tinged urine. After three weeks the urine became distinctly bloody. He was ordered by a doctor drops of ergotin and cold sitz baths. In spite of this treatment the hæmaturia returned at intervals of five to six days, and lasted from twelve to twenty-four hours. A specialist was consulted who washed out the bladder. This had no effect on the hæmaturia. In the end of June he was suddenly wakened out of sleep by severe pain in the region of both kidneys. This passed away in four hours, though there was some pain left which made walking difficult for him. After the pain the blood in the urine was increased in quantity, and many large coagula were passed. Patient also had for the first time some fever. After the bleeding ceased the urine was found to be muddy, and later pain came on in the left kidney region.

In January 1897 he consulted Zuckerhandl in Vienna, who sounded his ureters and diagnosed a left-sided pyelitis, and treated him medically, telling him at the same time that extirpation of the left kidney might become necessary.

He soon after this came to hospital. The lower end of the left kidney was found to be palpable and painful, the kidney seemed normal in form, though somewhat enlarged. The right kidney, in spite of the thinness of the abdominal walls, could not be palpated. Freezing point of the blood 1·2° (slightly lower than normal). The deposit in the urine contained pus, red blood corpuscles. The mucous membrane of the bladder was somewhat hyperæmic, otherwise normal. The right ureter discharged clear urine, the opening of the left ureter could not be entered. The patient had occasionally fever. There was no disease in the lower genito-urinary tract.

The diagnosis of a left-sided pyelitis was easy, but the question was, what was the cause of the bleeding and the pyelitis, and was there a double lesion? The last question was the more important from the point of view of treatment.

The bleeding evidently came from the kidney, and, as the coagula showed, from the pelvis of the kidney. Two conditions were to be thought of, lithiasis and tumour. Korányi was

inclined to think it a case of stone, Herczel thought it a tumour. Korányi decided that an operation was advisable. If he were right as to the presence of a stone, his other contention as to kidney insufficiency made an operation the more urgent. If Herczel was right, he felt that his contention as to the insufficiency was not based on firm enough ground to justify him in preventing what might be a life-saving operation.

Accordingly the patient was moved to Herczel's Klinik. At the operation on 9th July 1897 a papilloma of the kidney was found, filling up the pelvis and invading the ureter. The kidney, with a large piece of the ureter, was removed. The patient left the hospital apparently in perfect health. Korányi saw him in the autumn, at which time he seemed perfectly well. Korányi thought, in view of the result of the operation, that probably the kidney insufficiency he had diagnosed had been due to some influence the diseased kidney had exerted over the other.

In December, however, he was informed that the patient was again suffering from hæmaturia and pyelitis, which, it seemed likely, was due to the presence of a papilloma in the right kidney, similar to that which had been present in the left organ.

Korányi concludes by hoping that the examination of the freezing point of blood may be of great use in renal surgery.

In a footnote he mentions some of the recent cases where patients had died, after a nephrectomy, from uræmia consequent on disease of the other kidney, which had not been discovered before the operation, either by the cystoscope or by catherisation of the ureters. In a case of König's epithelial necrosis was found; in a case of Lotheissen's, fatty degeneration; in another, no change; in two cases of Israel's, amyloid degeneration; in a third, tuberculosis; in a case of Benecke's, cystic degeneration; and in a case of Heinlein's, carcinoma.

XEROSTOMA (by A. J. Hall, *Quarterly Medical Journal*, vii., pt. 1, Oct. 1898.)—This paper is an extension of Professor Fraser's interesting paper on Xerostoma in the first volume of the Edinburgh Hospital Reports. Dr Hall adds to the record of this rare disease one case, and gives a summary of 39 cases, 19 of these being taken from Dr Fraser's paper. His own case was that of a woman aged forty-nine, with good general health. He describes her tongue thus: "The dorsum, sides and tip are quite dry, and of a smooth dull red appearance, marked by shallow fissures into small areas, resembling a piece of crocodile skin. These fissures are shallow, and on separating the margins show a thinned epidermis. The filiform papillæ are absent, and the fungiform somewhat prominent. There is some slight moisture at the base of the tongue. The gums, cheeks, and palate are dry and glazed, and usually have patches of dried

secretion on them. She cannot taste her food and has constantly a "salt taste" in the mouth. She has difficulty in masticating her food, and has to dilute it very much. There is not now, nor has there ever been, any swelling of the salivary glands. She can just taste strong quinine solution as bitter, but cannot taste sugar at all." She also complained of dryness of the nose and conjunctivæ, and had no flow of saliva.

Dr Hall gives an interesting tabular statement of the 39 cases. Of 3 of these he was unable to ascertain particulars. The remaining 36 cases he analyses as follows :—

Sex.—Thirty-two females, 4 males.

Age.—Between 20 and 30 years, 3; between 30 and 40 years, 5; between 40 and 50 years, 8; over 50 years, 18; total 34. Age not mentioned in two.

Parts affected.—Mouth and tongue, 36; nose also, 10; eyes also, 7.

State of skin.—Only alluded to in 8 cases. In 2 of these it is very dry, whilst in all the rest there is more or less sweating, and in 3 it is efficient and normal. We may, he thinks, conclude that the skin is not markedly affected as a rule.

Duration.—There is little to remark under this heading, except that the complaint seems to last usually until the patient dies, which may not be for many years.

Condition of tongue.—In almost all the cases where the condition of the tongue has been described, it has been "absolutely dry, smooth, fissured or cracked." In some cases it is said to have been "devoid of epithelium." This he takes to be an inaccuracy of description; it probably means devoid of marked papillary epithelial processes. The fissures in most cases seem to be merely thinned smooth epidermis, comparable to the healed-over cracks of an old eczema rimosum of the hands. It is also worth notice that in some cases a little dried secretion is found about the roof of the mouth, showing that there is still some secretion from the surface glands.

State of teeth.—This is definitely alluded to in 16 cases, and whilst the absence of teeth in some of the elderly patients is not surprising, yet in some of the cases there is a very distinct history of marked "crumbling away" of teeth at the onset of the dry mouth.

Reaction of mouth.—He has retained this heading in the list, as it occurred in Fraser's table, but the number of cases in which it is mentioned is only 3, of which 1 is acid, 1 acid or neutral and 1 alkaline.

State of salivary glands and ducts.—Parotids.—Any enlargement of these would be so noticeable to both patient and doctor that he thinks we may fairly consider that no mention of

such a condition implies no swelling. In 8 cases only were the parotids enlarged, either equally or unequally. In 3 of these they are described as tender and painful, in 4 they were not so, in 1 the gland ulcerated through into the mouth, but this case differs in several respects from the others. In 5 cases the parotid enlargement varied from time to time, in 1 of them this occurred every 2 or 4 weeks, whilst in another the swelling was increased and tender at the menstrual periods, at which time the mouth dryness was worse during the early stages of the affection.

Mode of onset and supposed cause.—In 19 cases there is a more or less definite statement as to this, and of these 6 are stated as having come on suddenly, for which, in some, a definite supposed cause has existed, whilst in others no cause is known. Amongst the causes mentioned in 19 cases, it is very suggestive that no less than 6 followed upon severe mental shock, usually the unexpected death of a near relative, or else followed a series of troubles causing much nervous prostration. In 4 cases the affection has been preceded by an attack of influenza (?) or by a slight febrile affection, as was the case in my patient. In the other 24 cases the cause is practically "unknown."

THE VALUE OF URANIUM NITRATE IN THE CONTROL OF GLYCOSURIA (C. Hubert Bond, M.D., *Practitioner*, September 1898, p. 257).—The use of uranium salts in the treatment of diabetes is not new; they were used upwards of fifty years ago, but shortly after their introduction they fell into disrepute. Dr S. West recently demonstrated their value (*British Medical Journal*, August 24th, 1895, and September 19th, 1896), and now Dr Bond publishes a series of cases corroborating Dr West's opinion. Dr Bond gives uranium as the nitrate, commences by giving 3 grains twice daily, and increases until either the sugar disappears from the urine, or until 10 grains or more are given thrice daily. In the cases he records, the treatment was most successful, and no unpleasant symptoms were produced.

ALBUMINURIA AFTER NARCOSIS WITH SMALL DOSES OF CHLOROFORM (Schousboe, *Hospitalstid.*, 1898, pp. 1233, 1253).—Schousboe, reporting from Bloch's clinic, gives a review of the literature and an analysis of fifty-two cases. The urine was examined before narcosis, often several times, and in every case immediately before the operation. After the narcosis the first urine passed was examined separately, then the whole daily urine was examined for several days, and in pathological cases till it became normal. The examination was both chemical and microscopic. Of the fifty-two cases, thirty-five showed nothing

abnormal before or after narcosis ; of eleven cases entirely normal before narcosis, four showed slight passing albuminuria, one with an isolated cast, seven had hyaline or granular casts without serum-albumen, usually in the first urine, but in two cases after a few days. The casts disappeared rapidly. Of six cases, abnormal before narcosis, four had serum-albumen and three of them showed increase after narcosis ; two had isolated hyaline casts and in one of them these were more numerous after. In the author's cases the average duration of chloroforming was thirty-two minutes, and the average amount 6·8 c.c. or ·2 c.c p. min.

THE SMEGMA BACILLUS IN URINE.—A. G. Nicholls (*Montreal Med. Jour.*, November 1898) discusses a fallacy in the ordinary method of staining the tubercle bacillus with fuchsin and decolourising with acid. The smegma bacillus is found in the urine of 59 per cent. of females, but much less frequently in that of the male. It has also been occasionally found in the sputum, and has apparently led to the erroneous diagnosis of phthisis in cases where the *post-mortem* has revealed only bronchiectasis, gangrene, or abscess. The smegma bacillus closely resembles the organism of tubercle, and, like it, is not decolourised by acids. It stains well with the ordinary aniline colours, and grows readily in the usual culture media. In urine it is more angular at the ends, occurs in masses, and is often attached to epithelial cells. As a means of differentiating the bacillus of tubercle from this and other organisms, Nicholls advises staining with carbol-fuchsin and counter-staining for five minutes with saturated solution of methlyene blue in absolute alcohol. Tubercle bacilli stain red, smegma bacilli and other organisms, blue.

DURATION OF THE SYPHILITIC CONTAGION (Neumann, *Wiener Med. Presse*, Jan. 1st, 1899).—After mentioning the opinions of others on this subject, Neumann sets forth the following views, based on his own experience :—(1) The infectiousness of syphilis is intimately related to the intensity and acuteness of the disease, and tends to diminish as time goes on. (2) Normally, provided that the case has been carefully treated, the risk of contagion has disappeared after three or four years—after the second stage has passed. (3) In certain cases secondaries appear more than four years after infection ; in these cases the risk of contagion persists for a longer time. These secondary lesions in the later periods are principally found in the mouth ; on the genital organs they are rare. They consist chiefly of erosions of the mucous membrane of the mouth and tongue, and therefore infection takes place more commonly from the use of dishes, etc., than from sexual intercourse. This fact is borne out

by the experience gained from many cases occurring in married people. These late secondary lesions are most liable to appear when the mouth is much exposed to irritation, as by smoking and drinking; they may disappear so rapidly as to render their recognition difficult. (4) Secondary syphilitic lesions may be observed even in the third decade of the illness; such cases are, however, rare. The appearance of secondaries five or ten years after infection is more common. (5) With regard to the contagiousness of the tertiary products, certain positive inoculation experiments may be set against numerous negative ones. Tertiary lesions are very rarely contagious when they occur late. But, as occasionally happens, gummata may occur during the second stage, especially in tubercular individuals and in those suffering from nephritis. In such cases syphilis runs a very unfavourable course, and probably the tertiary lesions are infectious. (6) Though contagiousness and the possibility of hereditary transmission run in so far together, that in both cases the tendency to occur diminishes with the duration of the syphilis, it must be clearly understood that hereditary transmission is possible, quite apart from the existence of any recognisable lesion. It therefore follows that a syphilitic man remains a danger so far as his offspring is concerned, long after he has ceased to be so to his wife.

SURGERY

LAPAROTOMY FOR INTESTINAL PERFORATION IN TYPHOID FEVER.—Cushing, in the *Johns Hopkins Hospital Bulletin*, Nov. 1898, p. 257, contributes a valuable and exhaustive paper on laparotomy for intestinal perforation in typhoid fever, with a detailed account of four cases and a discussion of the diagnostic signs of perforation. The first patient, a boy aged nine, was admitted with a severe attack of fever. Five days after admission he was taken with colicky abdominal pain. The expression was pinched, the abdomen soft, no muscle spasm, but considerable general tenderness. There was no obliteration of liver dulness. Four hours after the onset of the symptoms the abdomen was opened in the middle line, when a considerable amount of sero-purulent fluid escaped. A small perforation was found in the centre of a Peyer's patch in the ileum. It was closed with a circular silk suture. The peritoneum was irrigated and the abdomen partially closed, a gauze drain leading down to the site of the suture being left in position. Cultures made from the abdominal fluid remained sterile.

The patient rallied well from the operation. On the second day after operation a fœcal fistula developed, which, however, ceased to discharge after a few days. Thirteen days after the

first operation the patient suddenly became worse and vomited several times, had hiccough, and complained of abdominal pain. Perforation was diagnosed, the abdomen was opened, but no cause for the symptoms could be found, so the abdomen was closed, a drain being left leading down to omental adhesions around the site of the former perforation. During the next twenty-four hours the patient's condition grew worse, and symptoms of obstruction supervened. The abdomen was opened a third time, when an acute obstruction was found, due to adhesions, about a second perforation. This was relieved, the perforation sutured, and the abdomen closed with drainage. Convalescence was tedious, but the child ultimately made a complete recovery.

In the second case perforation took place in the fifth week, but was not recognised before general peritonitis had supervened. Laparotomy was performed and three perforations sutured, but the patient died four hours after operation.

In case three, perforation took place in the fourth week after prolonged abdominal symptoms. At operation perforation with general streptococcus peritonitis was found. The patient died in eight hours.

Case four, a child, in the fourth week of a relapse, was seized with abdominal pain and tenderness in the right flank, some distension and diminution of liver dulness. The abdomen was opened in the right iliac region, but with negative result. The patient made a good recovery. In discussing the cases the author recognises two kinds of perforation in typhoid fever; the appendicular, where the condition is practically one of acute perforating appendicitis, which give a certain percentage of recovery in unoperated cases. In the second variety the perforation occurs in the freely moving bowel, usually in the lower foot of the ileum. In the latter variety a distinction should be drawn between operation for perforation and operation for general peritonitis following perforation—the mortality in the latter being necessarily high.

It is far better to operate early, needlessly if it so eventuate, than to wait till symptoms of general peritonitis supervene.

In the early diagnosis of perforation a sudden acute onset of increased abdominal pain is an all-important symptom which may be absent or, owing to the patient's stupor, overlooked. Any complaint of pain with tenderness should arouse the greatest suspicion, as the author considers it is to be regarded as associated with the pre-perforation stage of ulceration. The recognition of such a stage is all-important, as it offers the ideal time for operation. A pronounced drop in the temperature is a not infrequent symptom of perforation, but may be absent and may be present with other conditions, such as hæmorrhage. Vomiting is unreliable. As regards leucocytosis, its presence

or absence, a final conclusion cannot at present be offered. The author considers, however, that from his cases he can conclude that the appearance of leucocytosis points to some inflammatory complication in its early stage, which may be localised peritonitis with a pre-perforation stage of ulceration or a circumscribed slowly-forming peritonitis after perforation. If general peritonitis supervene, the leucocytosis disappears. The author concludes that if the diagnosis of perforation is made, operation is indicated whatever the condition of the patient.

EXPECTANT TREATMENT OF APPENDICITIS.—Dr Guinard discusses this method in the *Gazette des Hopitaux*, 16th June 1898. His conclusion is, that the doctrine of expectation is most dangerous in such cases, and may give rise to terrible consequences.

When one sees a patient in the acute stage of the disease, two possibilities present themselves. Most frequently (1) the patient shows signs of a very acute peritoneal infection, or (2) he shows clear signs of a localised infection. Laparotomy is absolutely indicated in such cases. In the case of very acute infection the prognosis is very grave, while the operation is not so, and the patient has ninety-nine chances out of a hundred of succumbing to his disease if not operated upon. In the localised infection, in pericæcal abscess, the prognosis is generally good, but immediate laparotomy is demanded here also.

In other conditions, however, it is not so easy to make up one's mind, as, when one sees a patient at the beginning of a crisis. Medical treatment in such cases can do much good. It is well, however, to know that some medicines may do much harm. Many patients are seen who have been purged violently or to whom emetics have been given. Such treatment only tends to produce intestinal perforation or to break down adhesions and the limitations of infection. The only rational medication to recommend is that of rendering the intestinal coils rapidly and completely immobile. Opium and preferably hypodermic injections of morphia, together with the continuous application of ice to the abdomen, form the best means of attaining this object. No purgatives, no emetics, no vesicatories, no enemata, no cuppings, no ointments are to be employed: so far for medical means; but in every case of appendicitis, no matter how slight, one ought to be in absolute readiness at any moment to perform the operation, as sudden accidents so easily occur. At the first sign of general infection of the peritoneum or of paracæcal collection, one must operate immediately.

SOME NEW SUGGESTIONS IN X-RAY PHOTOGRAPHY.—Wight, writing in the *Philadelphia Medical Journal* of January 14th, gives a few notes on a method devised by him for taking

radiographs with more rapidity and with more detail. He has taken a radiograph of the hand and wrist, and had it mounted and ready for examination in twelve minutes. The denser structures, such as bone, appear white by this method, the softer tissues being in darker shades.

His method is as follows :—

A sheet of very sensitive bromide-paper of any size is placed in a black envelope, and this is placed in an orange envelope. This combination of envelopes must be absolutely non-actinic, and the bromide-paper must be handled in a dark room. The two envelopes are then placed in close contact to the part to be depicted. The bromide-paper being flexible, can be made to conform to irregularities of surface. The tube is placed at a distance of from 8 to 15 inches. The paper is developed just like a dry paper and mounted wet. This gives a direct positive. It responds much more quickly and with more detail than any dry plate, from ten seconds to one minute being the time required for a hand or wrist.

The apparatus used is described as follows:—"A comparatively high voltage street-current is passed through an electrolytic condenser of five elements placed in series, with a resistance of sufficient magnitude to furnish 6 ampères. The terminals of the condenser are attached to the terminals of the primary of an induction-coil. The voltage on the primary of the coil is 10 volts, rising slightly. The current at the time of contact of the vibrating break is more than 6 ampères, and rises gradually to a maximum. The X-ray tube is attached to the secondary of the coil, and its maximum effect is attained when the current on the primary of the coil has reached a maximum."

DISEASES OF CHILDREN

INSPIRATORY STRIDOR OF INFANTS.—Avellis (*Münch. med. Woch.*, July 26 and August 2, 1898) considers afresh the whole question of this so-called typical stridor of infants. The stridor begins at or shortly after birth, and may last for many months. There is considerable variation in its strength under varying circumstances. There may be indrawing of the sides of the chest and in the neck. The children are otherwise healthy and do not usually show any anxiety. Cyanosis and slight asphyxia may be present. It had been known to occur in more than one member of a family. The stridor subsided without any treatment. It might recur in adult life on any extra exertion. The condition had been known for a long time, but had been frequently confused with laryngismus stridulus, a totally different affection.

While the nature of this stridor and its relations had been fully described, more especially by Dr John Thomson of Edinburgh, there was still a great difference of opinion as to its true explanation. The laryngoscopic appearances to which Löri had attributed it had remained unconfirmed, while the changes recently described by Sutherland and Lack as occurring in the epiglottis and ary-epiglottic folds were not the cause of the condition, but rather the result of some stenosis of the air-passages at a lower level. The theory which considered it as a glottic spasm secondary to a central neurosis was untenable and quite inadequate to explain the continued presence of a stridor for so long a time or its variability under different circumstances.

The author believed this stridor could be caused by the thymus pressing on the trachea or bronchi, as in two cases presenting an aggravated form of this clinical condition relief had been obtained by surgical interference with the thymus, a proceeding anticipated by Allan Burns years before. This view had been further supported by the *post-mortem* examination of a case of chronic dyspnœa, in which an enlarged thymus was the only cause of death discovered, and in which tracheal compression could be demonstrated. There might be a difficulty in a differential diagnosis between this and enlarged bronchial glands even although the latter possessed distinctive features. Both conditions had been known to occur at the same time.

The author makes no reference to Eustace Smith, who again (*Lancet*, Aug. 27th, 1898) reiterates his belief that there are probably several distinct causes of laryngeal stridor in children. The good results which he has got in this condition from the removal of post-nasal "adenoids" lead him to consider their presence as by no means an unimportant factor in the production of such a stridor.

Notices

INTERNATIONAL CONGRESS OF GYNÆCOLOGY AND OBSTETRICS.—The Third Session of the International Congress of Gynæcology and Obstetrics will be held at Amsterdam, from the 8th to the 12th of August 1899.

The questions arranged for discussion are as follows :—

1. The surgical treatment of fibromyoma.
2. The relative value of antisepsis and improved technic for the actual results in gynæcological surgery.
3. The influence of posture on the form and dimensions of the pelvis.
4. The indication for Cæsarian section compared to that for symphyseotomy, craniotomy and premature induction of labour.

Among those who have consented to take part in these discussions are Messrs Doyen, Howard Kelly, and Schauta, who will treat the first question; Messrs Bumm, Richelot, and Lawson Tait, the second; Messrs Bonnaire, Pinzani, and Walcher, the third; and Messrs Leopold, Pinard, and Pestalozza, the fourth.

The reports, with their translations in the official languages, will be sent to all the members, a month before the opening of the Congress. As regards private communications, preference will be given to those bearing upon the above-mentioned leading questions. Time will also be allowed sufficient for any demonstrations kindly afforded by the members.

The official languages are—English, French, German, and Italian.

The subscription for membership is one guinea. Subscription forms and further particulars may be obtained from the Hon. Secretary for Great Britain and Ireland, Dr Arthur Giles, 37 Queen Ann Street, London, W.

Notes of Drugs, &c.

Vitalia Meat Juice.—The Vitalia Co., Waltham Buildings, 1 Holborn Circus, E.C.—Meat juices and extracts are amongst the most useful means at the disposal of the profession for the sustaining of strength, and often therefore the preserving of life, in severe acute illness with much prostration. With so many competitors in the market it is often difficult for the busy practitioner to know which to select. Vitalia is a preparation on which much reliance may be placed: it is a true meat juice prepared by a cold process. It contains a large per centage of readily assimilable albumin, and is both a food and a powerful stimulant. The price is moderate, 6 oz. costing 2s. 6d., and 12 oz. 4s. 6d., and it is thus brought within reach of all save the very poor. It is pleasant to the palate, when diluted, and may be given to children as well as to adults. Wherever a meat juice is indicated, Vitalia can be used with confidence.

Soloids of Carbolic Acid.—We have received samples of these from Messrs Burroughs, Welcome & Co. The soloids contain 60 grains of carbolic acid, and they are put up in glass tubes. This convenient form will, we doubt not, be as acceptable to the profession as are so many other preparations sent out by this enterprising firm.

EDITORIAL NOTICES.

All communications regarding Original Articles, Medical News, Reports of Societies, and Exchanges should be addressed to the EDITOR, *3 Walker Street, Edinburgh.*

Books for Review, and all Communications regarding Subscriptions, Advertisements, Terms for Advertising and Reprints should be sent to the PUBLISHER, 18 *Teviot Place, Edinburgh.*

THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

THE PRESENT POSITION OF THE PESSARY IN GYNECOLOGICAL PRACTICE

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(Read before the Edinburgh Obstetrical Society)

THE examination of the Transactions of this Society, published during the last thirty years, reveals the fact that the question of the employment of pessaries engaged the attention of the Fellows on exactly ten occasions[1] during that period of time. Seven of these ten occasions were prior to the year 1880, and only one was in the last decade. On only one of these occasions was the communication to the Society of the nature of a paper; in all the other instances it consisted in the exhibition either of a newly invented pessary or of an old support which had been worn in the vagina for a long term of years (five in one instance, sixteen in another). The precise amount of space in the Transactions occupied by the record of these ten communications was six and a half pages. Six and a half out of a total of five thousand four hundred and sixty-three pages does not appear to be an excessive amount of space to have set apart for the consideration of pessaries during thirty years. Further, the employment of vaginal supports is a matter which has scarcely at all come before the Society even in connection with other subjects of discussion. Some of the Fellows, and notably Simpson, have incidentally adverted to their use, while one Fellow has strongly anim-

[1] *Trans. Edin. Obstet. Soc.*, vol. i. p. 42; ii. p. 47, 217, 360; iii. p. 288; v. (2) p. 144; v. (3) p. 140; x. p. 163; xii. p. 128; and xviii. p. 68.

adverted on their employment (I mean Berry Hart,[1] in his admirably suggestive paper on a "pathological classification of the diseases of women"); and Croom[2] has emphasised the dangers of intra-uterine stems in his "criticism of some of the lesser gynecological manipulations." These, however, have been passing references to pessaries, and I think I am right in stating that the question of their employment under the greatly altered conditions of modern gynecological practice has not been brought fully and formally before the Society.

It may be concluded from the paucity of references to pessaries in the Transactions of our Society that this means of gynecological treatment is so extensively employed and has its indications so exactly established as to give rise to no questions calling for discussion. It may also, and with the same degree of probability, be regarded as proving that the use of pessaries by the Fellows of the Society has been almost, if not quite abandoned, and that consequently nothing more remains to be said about it. A little thought, however, will be sufficient to show that it is still more probable that neither of these conclusions is warranted by the facts which are available for examination.

If an excursion be made into the territories of professional opinion and practice lying outside the necessarily limited area of the discussions which have taken place in this Society, it will, I think, at once become apparent that the use of the pessary is very far from being one of these matters about which it can be affirmed that the last word has been said. It will, indeed, be found that gynecological opinion concerning this question is best described as in a state of flux.

I have endeavoured to form an estimate of the present position of the pessary in gynecological practice by an inquiry into the evidence bearing on the subject found in current medical literature (in text-books and journals) and in the experience of instrument-makers supplying the profession, and so able to gauge the trend of professional opinion on this subject. I have also incorporated, what is of much less importance, my own method of procedure in dealing with the gynecological cases which are generally regarded as requiring treatment by pessaries.

[1] *Trans. Edin. Obstet. Soc.*, vol. xix. p. 82, 1894.
[2] *Ibid.*, vol. xvi. p. 25. 1891.

Before proceeding to extract from medical literature information on the status of the pessary in present-day practice, I may briefly refer to the evidence obtained from surgical instrument-makers on the demand for the various forms of uterine support now observed by them. I put to them certain questions, and I obtained the following answers :—

(1) During the last twenty years there has been a steady increase in the number of pessaries sold to the medical profession.

(2) Along with this increase in the total number sold there has been a steady decrease in the number of varieties asked for, so that at the present time the ring and the Hodge, in some form or other, and occasionally the vaginal stem with an abdominal belt, constitute practically the only ones in common use.

(3) Medical men show a marked tendency, after trying various forms of the Hodge, to return to the Albert Smith modification in vulcanite, and after testing rings of different kinds, to revert to the use of the simple india-rubber instrument containing a watch spring.

(4) More marked than the increase in the use of pessaries has been the growth in the demand for uterine curettes, and more especially for that variety commonly called Martin's. The increased sale of curettes, especially during the last six years, has been, so I am told, phenomenal ; and along with it there has been a very striking decrease in the popularity of caustic-carriers and instruments of that type.

(5) Intra-uterine stems are hardly ever asked for.

Such were the answers given me by the Edinburgh instrument-makers, and the inspection of the catalogues of makers elsewhere on the whole supports the notion that there has been a general increase in the use of pessaries by the profession and a decrease in the varieties so used. No doubt local influences have been at work in determining to some extent what shall be the favourite form of support in different places.

It is now necessary to inquire whether medical and more especially gynecological literature contain such references to pessaries and their use as will enable us to state that in this matter specialists and the general practitioner are at one in their opinion and practice. In order to arrive at some conclusion on this matter, I have taken twenty well-known text-books on Gynecology, all published within the last ten years, and

have analysed and epitomised the views on the employment of pessaries therein contained. The text-books selected were (in alphabetical order) those of Baldy, Balls-Headley, Bushong, Dührssen, Garrigues, Harrison (in Mann's System of Gynecology), Hart and Barbour, Herman, Küstner (in Veit's Handbuch der Gynäkologie), Labadie-Lagrave and Legueu, Lawson Tait, Lewers, Macnaughton-Jones, Mundé (in Keating and Coe's Clinical Gynæcology), Phillips, Pozzi, Simpson (in Playfair's System of Gynæcology), Skene, Webster, and Winckel. As far as possible I took the latest edition of each of these works. In some instances I found it a little difficult to form an opinion as to the author's own views on pessaries on account of the impartial way in which the subject was discussed; but generally there was sufficient evidence to indicate whether the writer was an ardent supporter of the mechanical treatment of displacements or not.

With regard to the primary question of the attitude of these authors to the use of pessaries in general, the result of the inquiry was as follows:—Eight were strongly in favour of this method of treating uterine displacements, five were strongly against it, and seven were critical and even sceptical without actually going so far as to condemn the method and banish the instruments. It is, however, necessary for me to qualify this statement to a certain extent. The most pronounced advocates of the pessary do not deny that it has inconveniences, that it requires to be used with care and intelligence, that it seldom really cures, and that it occasionally must give way to operative procedures. On the other hand, those that are most strongly opposed to its employment admit that there is a small residuum of cases in which the pessary either may or must be used. Further, the critical writers are not equally critical about all forms of pessary, and many of them freely concede that treatment by pessaries is fully justified in certain kinds of displacement although not in all. With this qualification I repeat that eight gynecological authors (Herman, Küstner, Lewers, Macnaughton-Jones, Mundé, Phillips, Simpson, and Winckel) were in favour of treatment by pessaries; five (Baldy, Balls-Headley, Bushong, Lawson Tait, and Pozzi) were much opposed to it; and seven (Dührssen, Garrigues, Harrison, Hart and Barbour, Labadie-Lagrave, Skene, and Webster) held views which are best described as intermediate.

It may be well if I first set forth the chief objections that have been raised against the use of pessaries in general without in the meantime specifying any special kind of cases.

General Objections.

1. *Inconvenience.*—It has often been stated, and of course with perfect truth, that the wearing of a pessary is an inconvenience, amounting in some persons to unpleasantness. It necessitates periodic visits to the medical adviser, and leads to an unhealthy feeling of dependence upon him; it entails frequent if not daily vaginal douching; it may set up or aggravate a malodorous discharge; and it may (if certain kinds be used) interfere with marital relations. Balls-Headley, it may be remarked in passing, magnifies the last-named inconvenience into a danger to morals, for he says that the pessary thus "strikes at the root of the institution of marriage, and especially of monogamy."

2. *Inefficiency.*—Some gynecologists have been so firmly convinced of the inefficiency of even properly adjusted, well-fitting and carefully used pessaries, as to doubt whether they ever are the cause of relief from symptoms; most have no doubt at all that they never really cure, in the sense of complete restoration of the normal position of parts. "I hate pessaries, and I never use them if I can help it," are the words of Lawson Tait; and in another place in his book he says that he has "many times wished that pessaries had never been invented." At the same time he admits that there are cases in which he is compelled to employ them, and he then uses either Fowler's cup pessary, or the "wedge" devised by himself. Even strong supporters of the use of pessaries generally admit that they very rarely cure, and are really temporary or half measures; and more need not be said regarding this aspect of the objection of inefficiency. But some go the length of asserting that they have not even the power of truly relieving symptoms. They aver that the evidence of patients who say their symptoms are removed is apt to be misleading; the support may be actually doing harm by still further damaging the natural supports of the uterus. The Zwanck pessary may be efficient in the sense of keeping up a prolapsed uterus for a time, but its efficiency is in the long run dearly bought. The

displacement is treated but the cause is not removed, it is indeed aggravated.

3. *Injuriousness.*—It has been further alleged that pessaries are not only ineffective, but also injurious and even dangerous. Some gynecologists have stated this objection moderately, and have made exceptions as to certain kinds of pessaries used in certain cases and in certain kinds of ways: the intra-uterine stem, the Zwanck, and the large ball pessary have come in for special condemnation, while the ring and the Albert-Smith carefully used and in suitable cases have generally been acquitted. Other writers, again, have regarded as dangerous all pessaries, even the indifferent ones; and among the evil results attributed to their use have enumerated pruritus, vaginitis, ulceration, fistulus formations, the prevention of union of a torn cervix, subinvolution, cancer, and septic inflammation of the uterus and tubes.

Such are the leading objections that have been urged against the employment of pessaries in general, and I may perhaps best sum up this side of the matter by again quoting from Balls-Headley, who confesses that he is an "apostate from complete faith in pessaries" after having been an intense believer. He asks what conditions then may be said to be left in which pessaries may be used, and he answers: a "few cases of parous normal os with retroflexion, or prolapse from subinvolution of the endometrium and broad ligaments, and moderately lacerated perineum in women who refused or were unable to have the proper treatment for subinvolution or repair of the supports adopted, and whom it may injure, never cures, but occasionally relieves." "With advancing knowledge, pessaries, like bleeding, will cease to be."

General Advantages.

1. *Convenience.*—All the strong supporters of treatment by pessaries emphasise their convenience. An occasional visit to a gynecologist, occupying probably only a few minutes, frequent vaginal douching, which possibly would be required anyhow, a transitory feeling of uneasiness in the pelvis when the pessary does not exactly fit or has been worn rather too long, cannot surely be regarded as sufficient reasons for advising a patient to face the ordeal of a plastic operation with all its incon-

venience, its expense, and its enforced confinement to bed for a longer or shorter time. As Mundé puts it, "Not every patient who has a displacement of the uterus wishes to be operated upon for its permanent cure." Further, there are the cases in which it is impossible for the patient, either on account of her advanced age or her occupation, to have any operation at all; in such instances the pessary becomes a great convenience.

2. *Efficiency.*—The opinion of all who make much use of pessaries in their gynecological practice is that they are undoubtedly effective in relieving symptoms. Some go further and state that they in many cases produce a permanent cure in a longer or shorter time. Mundé, speaking of recent displacements, affirms that in about twelve cases in a thousand the pessary may in a year or two be no longer needed. He says further: "No tampons, no astringents, no massage, no electricity, no posture, no baths, no vaginal douches, will, in my experience, take the place of a properly fitted vaginal pessary." Herman, writing on prolapse, says that "If a vaginal pessary is retained and keeps up the uterus, relief is almost complete and greater than can be obtained in any other way"; and in referring to chronic retroflexion, he believes that only about one case in fifty calls for any other methods of treatment than that by pessaries. Lewers goes further than most of the advocates of the preferential treatment of displacements by pessaries, for he affirms in relation to prolapse that "no plastic operation will cure cases of procidentia; no matter how complete the success of the operation may appear at the time, unless the patient wears a pessary, the displacement will most probably return as badly as ever. If, however, she wears a ring, a permanent condition of comfort is obtained." Macnaughton-Jones has no doubt as to the efficiency of the well adjusted pessary, for he asserts that "in all forms of displacement where its employment is clearly indicated, it generally gives material relief." The advocates of pessaries may differ in their views as to the manner in which these instruments relieve symptoms, but that they do relieve symptoms all are agreed. That they are effective means of treating displacements is, therefore, urged as their great advantage.

3. *Safety.*—Most gynecologists freely admit that the ordinary vaginal pessaries used with ordinary care are perfectly

safe; but those who strongly advocate their use claim that even intra-uterine stems and instruments of the Zwanck type are quite innocuous. The bad results that are occasionally reported are ascribed by these pessary-partisans to want of care in adapting the pessary to the person, and to absence of precautions on the part of the patient wearing it. Several writers state that pessaries of the nature of the Zwanck must be taken out every night by the woman herself and replaced in the morning, and they do not apparently fear that she may be unable or unwilling to do so, nor do they dread any evil results from her want of knowledge of the anatomy of the parts. All these authors emphasise the safety of the pessary as contrasted with the danger of other, and especially of surgical, methods of treating displacements; and to them the remark made by Lawson Tait that he is certain that removal of the ovaries is "a far safer proceeding than the employment of intra-uterine stems, and has the merit of being effectual" must appear extraordinary indeed.

I have thus placed in order, the one over against the other, the statements of the strong advocates of pessaries and those of the strong opponents to their use. It is now necessary to take some notice of the gynecologists who give a critical approval to the employment of certain kinds of pessaries in certain kinds of displacements and under certain circumstances. This can best be done by considering the various displacements.

Pessaries in Prolapsus Uteri.

1. *Incomplete Prolapse.*—In cases of incomplete prolapse, where the perineum can still be depended upon to make retention of the pessary possible, many gynecologists recommend the india-rubber ring or Hodge-Smith, with or without transverse bars (according as there is or is not some degree of cystocele). It is claimed for this method of treatment that it relieves symptoms, that it keeps the replaced uterus in its place, and that it so gives time for the normal uterine supports to regain their tone. It is further thought that should a pregnancy occur, or the climacteric be near at hand, this benefit may become permanent, and a real cure be effected. Most authors, however, are of opinion that the treatment by pessaries

is in these cases only palliative, and the relief temporary. The alternative kinds of treatment in incomplete prolapse, with a certain degree of perineal efficiency, may be stated to be (1) the purely palliative plugging of the vaginal vault with glycerine or ichthyol tampons, with or without rest and douching; (2) uterine curettage to diminish the uterine subinvolution and restore tone; (3) anterior colporrhaphy, especially when there is marked cystocele; (4) perineorrhaphy even when the perineum is not markedly defective; (5) ventro-fixation of the uterus (not often); and (6) Alexander's operation (not often).

(2) *Complete Prolapse.*—In cases of complete prolapse, where the perineum has almost or entirely lost its power of retaining a pessary in the vagina, the only form of support which is possible is the stem, with an abdominal belt and outside straps and perineal pad. The Zwanck and all instruments with hinges and screws are now generally regarded as both unsatisfactory and dangerous. Even with such stems and belts as in Cutter's pessary the relief afforded is only precarious, and often quite illusory (Pozzi). The only cases in which most gynecologists would countenance the wearing of such supports are in old women who either refuse or are too weak to be subjected to operative procedures, or in younger women who absolutely decline to be relieved in any other way. The most hopeful view that one can take of treatment by pessaries in these cases is that by their means a complete prolapse is turned into an incomplete one, and that in time it may be possible to replace the stem and outside straps by a single vaginal pessary (A. J. C. Skene). It is well to bear in mind that it is quite necessary before inserting a Cutter's stem to cure ulcerations and erosions on the cervix. It is questionable whether in all these cases equally satisfactory (or rather equally unsatisfactory) results might not be obtained by means of plugging the vagina tightly with marine lint, and renewing the packing every third or fourth day. The alternative procedures to pessaries in the treatment of complete prolapse are (1) perineorrhaphy; (2) colporrhaphy, anterior or posterior, or both, with or without perineorrhaphy; (3) ventrofixation of the uterus; (4) Alexander's operation; and (5) vaginal hysterectomy.

The rules which I have laid down for myself, and which

I always attempt to carry out in cases of prolapse, are as follows:

In incomplete prolapse I endeavour first to exclude the physiological prolapse of an early pregnancy, and second, I try to assure myself that the symptoms from which the patient suffers are due to the displacement itself, and not to concomitant conditions. As a general rule, no pessary is referred to or used on the first occasion of seeing the patient, but a simple tampon of cotton wool is introduced into the vaginal vault. At the second visit I am usually better able to determine to what extent symptoms are due to the prolapse, for in the interval the patient has been regulating the bowels. Not infrequently no further treatment than the care of the bowels associated with the occasional introduction of a glycerine tampon and vaginal douching suffices to remove symptoms, and the patient is possibly saved from a long course of pessary-wearing. In other cases symptoms persist, and I then in accordance with the condition of the perineum and uterus suggest either perineorrhaphy or curettage, the former when the cause of the prolapse seems chiefly to be due to weakening of the pelvic floor, the latter when it seems to be increase in the weight of the uterus. Sometimes both these operations may appear to be needed, then both are suggested. If, however, the patient do not wish to undergo an operation, I conceive it to be my duty to state what amount of relief she may expect to receive from wearing a properly fitted pessary, what inconveniences its wearing will entail, and what amount of medical supervision it will require. These matters having been explained, I then endeavour to adjust a pessary, generally a ring, to the vagina, often trying several before finding one which keeps up the uterus, gives no pain, and is retained. I instruct the patient to return if pain or vaginal discharge supervene, and at anyrate to come back in a week for examination, to use the douche twice in the week, and to avoid great exertion. If all goes well the patient will only require to return once in six weeks or two months, after the proper size of pessary has been arrived at, to have the support taken out, washed, and reinserted. I have under my care now a lady who, when I first saw her, was almost incapacitated from active life by a condition of moderate prolapse, with considerable enlargement of the cervix. Operative measures were

proposed, but absolutely refused. A simple ring was then fitted to the vagina. The patient comes to me four times a year to have the support seen to, and, to use her own words, is in the intervals quite unconscious that she is wearing any support for the womb at all. She leads a very active life, suffers from no vaginal discharge at all, and has no pain. At the end of four months the pessary is not offensive. In another very similar case the pessary requires to be changed every month, and even then is distinctly offensive. I can find no satisfactory explanation for this difference, which I have noticed in other instances.

I think, therefore, that in cases of incomplete prolapse it is right to suggest radical means of treatment first, but if these are objected to, I do not think that I am justified in withholding the treatment by pessaries after I have explained that their action is palliative. On the other hand, in cases of complete prolapse I recommend operative treatment, and even when patients object to it I still do not advise pessaries. I leave it to the patients to introduce the question of treatment by pessaries, and when they do I do my best to persuade them against it. It is with the greatest reluctance that I allow myself to be persuaded into treating any one save an old and feeble patient with such contrivances as vaginal stems with outside straps. These are necessary evils, perhaps, but I wish to be very sure that they are necessary.

Pessaries in Antrorsions.

1. *Anteversion.*—Most authors are now agreed that to try to treat anteversion of the uterus by pessaries is to use means which are inadequate to remedy a condition which is not itself productive of trouble. If, however, an enlarged, chronically inflamed uterus is more or less fixed in an anteverted position, then symptoms arise which are due immediately to the metritis. Consequently most gynecologists treat the metritis and the metritis only, and in doing so do not invoke the help of pessaries; but some think that the insertion of an indifferent pessary, such as the ring, is of value in hastening the cure by raising the uterus. Labadie-Lagrave, for instance, treats first the metritis, and when various means fail, endeavours to replace the uterus either by a hypogastric belt or by a ring pessary;

with regard to such instruments as Graily Hewitt's cradle, he says: "Mais beaucoup de malades ne peuvent les supporter, et souffrent davantage lorsqu'ils sont en place!"

2. *Anteflexion.*—That sharp anteflexion of the uterus and certain well known symptoms, such as dysmenorrhoea, sterility, and bladder irritability, commonly coexist must be admitted by all; but there is a vast difference of opinion among gynecologists as to the part played in the production of these symptoms by the displacement. Some doubt whether the anteflexion itself causes any symptoms, and are in consequence opposed to the use of pessaries. Others see in the displacement the immediate source of all the trouble, and are only in doubt as to the particular kind of pessary to be employed. I think most authorities are now agreed that a congenitally fixed and flexed uterus is not amenable to treatment by pessaries. Another point about which there seems to be general agreement is that no vaginal pessary will straighten an anteflexed uterus even when the uterus is fairly movable. The question in anteflexion and its treatment by pessaries has therefore narrowed itself down to the justifiability of employing intra-uterine stem pessaries. Even strong advocates of treatment by mechanical supports are in doubt whether the risks attendant upon wearing intra-uterine stems do not more than counterbalance any good effects which may arise therefrom. The dangers and risks incident to the wearing of stem pessaries are well set forth by Skene, a gynecologist who is by no means opposed to the use of pessaries in general; the chief are sepsis, inflammation and the perforation of the uterus. Various devices have been adopted to render intra-uterine stems innocuous, and while it cannot be said that anyone has succeeded, it may be admitted that the entirely intra-uterine (*i.e.* without a vaginal portion) pessary recently brought forward by Lefour comes nearest to the standard. It has been not infrequently claimed by the advocates of intra-uterine stems that menstruation, scanty and accompanied by great pain before the introduction of the stem, becomes profuse and painless after it has been placed in the uterus; but opponents of the stem point out that the pessary in such cases, instead of draining away discharge, has really produced the discharge by setting up suppuration, and has led to lesions that take months to heal (Baldy). Indeed, there seems to be a very widespread feeling that intra-uterine

stems are too dangerous for ordinary use. Lawson Tait, in his remarks on displacements to the front, says, "the only local treatment that will be of the slightest use is the galvanic stem, and that is far too risky!" Winckel is an exception, for he "remains an advocate of intra-uterine elevators, although employing them less frequently than formerly"; he uses them in anteflexions after the inflammatory symptoms have disappeared.

What then, it may be asked, are the alternative methods of treating the symptoms associated with antrorsion of the uterus? In many cases it is the metritis that causes the symptoms, and in these the treatment is that of metritis—douching, ichthyol, plugging, curettage, cauterisation. In others it would seem to be the coexisting undeveloped state of the uterus and especially of the cervix which is at the root of the trouble; then the occasional passing of the uterine sound, cervical dilatation, division of the cervix, and electricity (*e.g.* negative pole internal, five minutes of a current of from 50 to 80 m.a. twice a week for a month or six weeks, Milne Murray), and in very grave cases removal of the ovaries.

In my own practice I have used pessaries scarcely at all in antrorsions of the uterus. I look upon the normal position of the uterus as one of *mobile* anteversion with a small degree of anteflexion, but I place more emphasis upon the condition of mobility than upon that of direction. Consequently, so long as there is uterine mobility I do not think of treatment by pessaries save only when I find an enlarged and subinvoluted organ lying anteriorly, and at a slightly lower level than usual when the insertion of an indifferent pessary, such as the ring, may occasionally give temporary relief from symptoms. When, on the other hand, there is not uterine mobility, pessaries are in my opinion, neither safe nor effective. In these cases recourse has to be had to measures having as their object the relaxation of adhesions: the minor gynecological methods such as ichthyol tampons and the douch I by no means despise, curettage I sometimes use but with great caution, and with the growing conviction that in this operation under these circumstances it is probably the dilatation rather than the scraping that does good. Electricity I have not yet had occasion to employ, but I intend to use it in obstinate cases. Finally there is, I believe, a large number of instances in which the symptoms are really due to rheumatism affecting the uterine muscle, and then I find the

employment of anti-rheumatic remedies internally with the abandonment of local treatment in the pelvis will often give great relief to the patient.

Pessaries in Retrorsions.

While pessaries are coming to be looked upon as unnecessary and ineffective in antrorsions, and as temporary and palliative props in prolapsus it is evident that the mind of the profession is far from made up on the question of their use in retrorsions of the uterus. That this is so is fully borne out by the perusal of gynecological text-books and current medical literature. Writing on retroversions, Skene sums up thus:— "At the present day, I presume, that if the harm done should be placed opposite the good accomplished by all the pessaries in use, the results would be about equally balanced. It follows then that as matters stand at this moment it is a question whether the human race would be better or worse if all the pessaries were put out of existence. The all important fact remains, however, that pessaries are of great value and capable of giving relief to those who suffer from some of the forms of uterine displacement, if properly used." Another circumstance, almost as significant in its way as this quotation from Skene, is the fact that several writers on gynecology have found it necessary to consider the question of pessaries in retrorsions under a number of headings. Thus, J. C. Webster divides cases of retroversion into seven classes and gives special direction for the management of each. It will be of service in demonstrating the difficulties met with if I give a synopsis of Webster's mode of grouping retroversions (and the same applies to retroflexions) in reference to their treatment by pessaries.

1. In retroversion with a uterus fixed by peritonitic adhesions no pessary is to be used.
2. In retroversion with a freely movable uterus, not enlarged, and with no pelvic trouble there is no necessity for reposition and the pessary, but if there is bronchitis or the lifting of weights, then it is well to keep the uterus anteverted by a pessary.
3. In retroversion of a freely movable puerperal uterus with no pelvic trouble there is no need for a pessary,

but if there are to be strains and lifting weights, then use a Hodge or Smith pessary.

4. In retroversion of the pregnant uterus use a Hodge or Smith up till the fourth month.
5. In retroversion with a movable uterus, with pelvic symptoms, but with neither ovary in the pouch of Douglas, use the Hodge or Smith.
6. In retroversion of a movable uterus with pelvic symptoms, and with one or both ovaries in the pouch of Douglas, use no pessary till the ovarian inflammation has been diminished by douching and plugging, then use first the ring, and afterwards the soft Hodge or Smith or Thomas.
7. In retroversion of a movable uterus with pelvic symptoms and old posterior perimetritis or cellulitis, follow much the same lines as those in the preceding rule.

Dr Webster gives, I think, a very fair statement of the views on the use of pessaries in retrorsions which are held by those who are neither strong advocates nor strong opponents of pessaries in general, but are more or less critical regarding them. The question of the treatment of retrorsions by pessaries is the watershed dividing the two currents of opinion on the subject of the employment of pessaries in general.

This communication has already grown too long to warrant me in giving the various arguments pro and con the use of pessaries in backward uterine displacements, but it may be helpful if I pick out one or two leading points of interest. It seems, for instance, that most authorities are now agreed that it is necessary to replace the uterus before inserting a pessary. Herman is peculiar in thinking that the simple introduction of the Hodge will antevert a retroverted uterus; he admits that it will not effect this with a retroflexed organ, and establishes a distinction between retroversion and retroflexion founded not on symptomatology but on treatment in consequence of this difference in behaviour with the pessary. It seems also to be pretty generally accepted that in many instances the correction of a posterior deviation of the uterus by a pessary is followed by an amelioration or a total disappearance of the symptoms; but all are not agreed as to the manner in which this result is brought about, some ascribing it to the replacement of the uterus itself, and others to the

relief of the concomitant morbid changes in the pelvis thus rendered possible. There is also general agreement that in retrorsions, pessaries scarcely ever effect a permanent cure; that is to say the giving up of the wearing of the instrument generally results in the return of the symptoms. There is an evident and growing tendency to treat first the so-called complications before resorting to the use of pessaries; and hence it has come that uterine fixation, uterine tenderness, ovarian prolapse and tenderness, and pelvic peritonitis and cellulitis have all been recognised as contra-indications to the immediate employment of pessaries. An increase in this tendency will inevitably result in a great diminution in the number of cases treated by supports, for the curing of the complications will often make any further treatment by pessaries or otherwise unnecessary.

The alternative methods of treating the symptoms associated with retrorsions are vaginal tamponing, uterine curettage with or without intra-uterine cauterisation and vaporisation, pelvic massage, cervical amputation, vaginal fixation of the uterus, ventro-fixation, and the Alexander-Adams operation. Looking back over my personal experience in the treatment of the symptoms closely associated with retrorsions of the uterus, I am struck by the difficulty I have had in deciding upon the means to be adopted in individual cases. Under certain circumstances the line of procedure has been clear enough; thus in all the cases of retroversion of the gravid uterus that I have met with, I have obtained perfectly satisfactory results from replacing the uterus and inserting a Smith pessary, which the patient wore till about the fifth month of her pregnancy; while in all the instances of retrorsion of the uterus in the unmarried that I have seen I have not used pessaries, and have nevertheless been able to relieve the symptoms in most. But outside these two groups of cases I confess I have often had much thought as to the right line of treatment to be followed. For instance, I have under my care now a patient with a movable, slightly enlarged uterus, retroverted and slightly retroflexed; more than four years ago I inserted an Albert Smith pessary, with the result that the symptoms, which had been so marked as to prevent the patient doing her ordinary house work, completely disappeared; from time to time I have intermitted the use of the support with the consequence that the symptoms returned; about two years ago pregnancy occurred and ended

normally, but the pessary had to be resumed again after the puerperium. This patient refuses to consider operative means, urging that as long as she wears the instrument she feels quite well and has a normal menstrual flow. The patient's symptoms are entirely relieved, but can it be said that she is cured? In contrast with this case let me cite another; it is one of chronic endometritis in a retroverted uterus with symptoms, especially at the menstrual times, incapacitating the woman from the ordinary duties of life. I explained to her the probable advantages of immediate operative measures over the prolonged treatment by pessaries, and got her free permission to curette the uterus; this was accordingly done, the state of the mucous membrane apparently justifying the means employed and encouraging the hope of a permanent cure. No such good result, however, has followed, and I have been compelled to have recourse to the despised pessary which is now affording the patient the desired freedom from symptoms at any rate.

In the main, I find myself being guided in the treatment of retrorsions by the same considerations as J. C. Webster has set forth and to which I have already alluded; the occupation of the patient, the condition of fixity or mobility of the displaced organ, the presence or absence of pelvic symptoms, and the presence or absence of such complications or concomitants as ovarian prolapse or pelvic peritonitis all help us to determine whether the pessary is to be the means of treatment chosen or not.

There is one point to which it is necessary for me specially to refer in conclusion. It is that there is the greatest need for a fuller consideration of the selection of the pessary to be used in the individual case than is usually given. In the treatment of retrorsions this is peculiarly needful, for the pessaries used in such cases ought to be as nearly as possible moulds of the vaginal canal; in size, in shape, and in curvature, they should correspond to the size, shape, and curvature of the vagina. It may be that the support will require to be changed several times before a satisfactory result is obtained.

I have not touched upon pathological or congenital retroflexions, but I may say that I regard them as governed by the same laws as the pathological anteflexions.

It must be regarded as borne out by all the evidence that has been brought together that, taking a wide view of the place

of pessaries in modern gynecology, we must look upon them as still having a sphere of usefulness within which their value certainly as palliatives and possibly also as curative means must be conceded. It has been said by Mundé that "a pessary" (he is writing specially of retrorsions) "is a necessary evil"; but I venture the assertion that pessaries are necessary, and not necessarily evil.

LITERATURE.

1. Recent Text-books.*

* N.B.—This list simply includes the text-books epitomised in the paper.

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2. Balls-Headley, W. "Evolution of the Diseases of Women." 1894.
3. Bushong, C. H. "Modern Gynecology." 1894.
4. Dührssen, A. "Gynæcological Practice." 1895.
5. Garrigues, H. J. "Diseases of Women." 1894.
6. Harrison, G. T. In Mann's "System of Gynecology." 1888.
7. Hart, D. B., and Barbour, A. H. F. "Manual of Gynecology." 1897.
8. Herman, G. E. "Diseases of Women." 1898.
9. Küstner, O. In Veit's "Handbuch der Gynäkologie," Bd. I. 1897.
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11. Lawson Tait. "Diseases of Women." 1889.
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14. Mundé, P. F. In Keating and Coe's "Clinical Gynæcology." 1895.
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DISINFECTION OF THE MOUTH

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IT is questionable whether we sufficiently recognise the part played by the upper portion of the alimentary tract in the absorption and distribution of infectious material, capable of producing disease. The most casual clinical observer cannot fail to have noted, how frequently the lymphatic glands in the neck are enlarged. We are so in the habit of ascribing these to tuberculosis and looking upon them as simple manifestations of a tubercular diathesis, that we are apt to overlook the significant fact, that there must be some peculiarly constant cause, which leads to the selection of these particular glands to the exclusion of others. It cannot possibly be that the cervical glands *per se* possess a proneness to tubercular affection more marked than exists in any other. We must, therefore, search for some reasonable explanation which will suffice to account for this otherwise inexplicable selection.

All lymphatic glands are sterilizing filters placed so as to guard the system against the absorption of material which, without such protective means, would be likely to prove injurious. That this their normal function is effectively carried out in the vast majority of cases, in strict obedience to the calls made upon them, there can be no doubt; and how much actual disease they are capable of preventing, it is impossible to say. But there are occasions when the call upon their functional activity exceeds the power they are capable of asserting, and under the strain of an unduly virulent attack, they, in the true sense of the word, break down. The inflamed toe with its consecutive acutely suppurating femoral gland sufficiently illustrates the point.

It seems, therefore, quite reasonable to conclude, that when lymphatic glands enlarge in the neck, they do so mostly as the result of material absorbed by the afferent lymphatics; these materials prove of such a nature that the glands are unable to overtake the work put upon them, and manifest their inability to do so by succumbing to the more successful onslaught of pyogenic and pathogenic micro-organisms.

But we know that the enlargement of the cervical glands is histologically largely due to a chronic inflammatory process set up by the presence of the tubercular bacillus, and allowing as we have done that it is mostly through the afferent channels that a gland receives its supply, are we to conclude that it is by these lymphatics that the bacilli are conveyed to the gland? It would be perfectly reasonable to answer the question in the affirmative, and one would certainly do so were it not that another cogent factor has to be considered before giving a reply. It is a recognised fact that in a very large proportion of cases of local evidences of tuberculosis such as exists in joints and bones, the exciting cause is some antecedent history of a comparatively slight injury. There can be no question in these cases that the entrance of the bacilli to the damaged or injured tissues is not through a channel which leads from any particular infective focus situated on the external or internal surfaces of the body, but the bacilli must exist at the time of the accident in the blood, and find, by the damage effected at some region of the body, a suitable nidus for their growth. This mode of entrances into injured parts in other tissues, is the probable explanation of the way bacilli get into the lymphatic

glands. The glands are over-irritated or injured by noxious matter supplied to them through their afferent channels, and thus damaged they become suitable centres for the lodgment and development of bacilli, which at the time are probably circulating in the blood.

With this theory, therefore, of the way in which the cervical lymphatic glands become tubercular, we are naturally directed to consider the causes of the irritation which prepare the glands for tubercular infection.

There is no question that in a vast majority of the cases which come before us, no external evidences about the ears, nose, eyes, face, scalp or neck can be found. We are, therefore, reduced for our source of infection solely to the upper respiratory and alimentary tracts. We cannot, of course, ignore the part which it is possible the nasal and laryngeal passages may play in presenting receptive surfaces for the occasional absorption of septic material, but the uninterrupted passing in and out of the respired air renders it unlikely that bacilli or their products could find the rest requisite for their development and absorption. We may, therefore, consider it as probable, that the mouth, fauces, pharynx and œsophagus, present surfaces best suited for infective material to lodge and become absorbed.

My object so far has been to try and prove that the upper part of the alimentary canal, and more particularly the mouth and fauces, may prove a very ready receptacle for noxious material which may subsequently find its way into the system. The facility with which septic or pathogenic substances will gain an entrance into the lymphatic channels, will no doubt be very largely influenced by the condition of the lining mucous membrane; in other words, decayed teeth, ulcers, fissures, abrasions or inflamed surfaces will very materially help to let into the lymphatics infective material.

If further reasons were required to support the belief that the mouth and fauces play an important rôle in certain diseases, it would, I think, be found in the usually accepted opinion, that diphtheria, scarlet fever, and quinsy, have their initial symptoms in affections of the fauces. I might yet add, for whatever value may be attached to it in this connection, a story which I recently heard told of a medical officer of health of one of our great provincial cities. He had been asked by two medical

men to see a case which they strongly suspected was one of typhus. The medical officer verified the diagnosis without any doubt, and on leaving the patient commenced to spit, stating at the same time that it was his custom to continue to do so for the space of an hour after being in the presence of such a class of cases. This respected officer, whose peculiar and special function it was to prevent the spread of infection, and to adopt all such measures as should conduce to the welfare of the community whose general health formed his special department, evidently forgot, that in ridding himself of the infective material, which he conceived it possible might get into his mouth, was employing a method most conducive to the spread of the disease. Perhaps the simple precautionary measures to be presently described might suggest a better means of protecting the individual, while it would not endanger the community.

If, then, as there seems very little doubt, certain recognised specific conditions owe their origin to infection conveyed by or through the lining walls of the upper alimentary tract, may we not with some just reason conclude that even other diseases, the true source of which we cannot trace, may have their origin in the same way? Certainly there is no part of the whole body where infectious material, whether it be microbic or otherwise, can find such advantageous collecting and resting places as is afforded by the many dental crevices or mucous membrane folds of the mouth and fauces; where, too, micro-organisms can develop and multiply almost unimpeded. Unlike the stomach and the intestines, where there is the gastric juice and the bile, the mouth possesses no similar secretion, capable of neutralizing or inhibiting the effects of noxious material, for the saliva has probably no influence in this direction. That decaying teeth may prove a source of infection is probable, but they cannot be a very fertile source when it is considered how many people have bad teeth, but what a comparatively few have enlargement of the cervical glands or other manifestations of disease. The probable reason of this exemption, no doubt, is, that the cavity of a decayed tooth is such a hot bed of stinking saprophitic microbes, that it proves more than the refined and sensitive cocci and bacilli of disease can stand. No tubercular bacilli could certainly thrive in such a soil, and for that reason it probably is, that the mouth is so remarkably free from local manifestation of tuberculosis, when, through the ingestion of

uncooked milk and infected meats, so many opportunities are afforded for its being so.

If the above remarks have any cogency, they certainly point to the need of adopting some measures which will lessen the possibility of infection by the mouth. It may seem like descending to a very low and homely standard of precaution to touch upon such simple personal matters as the daily cleansing of the teeth with a brush. But I venture to think there is a great deal more involved in that simple process than the mere supposed endeavour to keep the teeth white on their anterior or labial surface. The efficient scrubbing with a brush cleans out many of the little holes and corners in and between the teeth where infective material can lodge. The process of freely rinsing the mouth also serves to mechanically dislodge stagnant material in other parts. I would, therefore, not think lightly of this simple daily practice, which, however frequently adopted, should never be omitted at night. But I need hardly point out that by disinfection of the mouth I mean a good deal more than this. When from any cause there is some lesion of the lining membrane of the mouth, either of the nature of a traumatic abrasion, an ulcer, an inflamed mucous surface, or a decayed tooth, the mouth should be freely rinsed with some antiseptic solution. I know of none better than a weak solution of Condy's fluid ; it is not distaseful, and a strong solution of it can be kept ready for dilution to the required strength. Doubtless, those possessing a sound and healthy constitution, and not exposed to sources of infection, need but little to take protective precautions ; but where the opposite conditions exist, I do not think too great a care can be exercised. Wherever there is a known tubercular predisposition there should certainly be the utmost care taken both to cleanse and disinfect the mouth. When also there is exposure to certain infective diseases, more particularly to those of diphtheria, scarlet fever, and possibly typhus, the mouth should certainly be well disinfected after exposure to infection.

There is yet a somewhat different class of cases, which manifests, I believe, unmistakable evidence that the mouth is capable of supplying infectious material to distant parts. I have frequently noticed—or rather, I should say, I at one time did, for I now take precautions to avoid it—that after excising cervical glands under the strictest antiseptic precautions, and

where previous to operation there had been no broken skin or sinus leading from the glands to the skin surface, infection of the wound took place if I attempted to completely close it. It was not the result of tension, but, I believe, the infection of the wound through the divided afferent lymphatics, which still were capable of conveying septic material from the mouth. To prevent this, a portion of the wound should be stuffed with sterilized gauze, the remaining part being stitched, if deemed advisable. The mouth should be frequently rinsed with weak Condy's fluid, and always after food. How potent the cleansing properties of this fluid are, I have frequently seen illustrated in cases where operations have been performed upon the mouth ; such, for example, as excision of the tongue or parts of the jaw, where by its frequent and free use inflammation is checked and the parts kept, as we say, perfectly sweet.

The purport of this paper, however, is not to propound any special line of practice, but to draw attention to a principle which may have very vital and far-reaching effects on the general health of the community. That the mouth may be, and probably is, the receptacle for media, the absorption of which can cause disease, is sufficient reason why we should not ignore the adoption of certain simple preventative measures. They call for nothing exacting in their application, and therefore, on that score, there is no reason why they should not be freely and readily employed.

ON THE FIXING AND STAINING OF BLOOD-FILMS

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THERE are many different methods of fixing blood-films, and these are recounted with more or less fulness and accuracy in special text-books on the blood and in handbooks of medical diagnosis ; but what is seldom or never clearly indicated in these accounts is the fact that no single method is capable of answering fully all requirements, and that each has its advantages and disadvantages which can usually only be learned by painful experience. As I have devoted much time to the

study of the blood, and have in particular worked through all the film-methods exhaustively, I should like to put my results on record for the benefit of the enquiring hæmatologist, and to publish also a method of fixing dried films which I have recently worked out, and which in rapidity and certainty will, I think, be found at least to equal its predecessors.

The following are the principal points to be borne in mind in making blood-films. The cover-glasses should be square, as thin and as flexible as possible, and should be cleaned thoroughly before using, either with soap and water, or with glacial acetic acid, water and alcohol. The blood should be drawn from the ear, the cover-glasses held in forceps, and the small drop of blood taken up by the upper cover and allowed to spread out between the two covers. These should then be carefully slid apart, the upper one only being moved, and care being taken neither to press the covers together nor to lift the upper one. The lower one is usually the better spread of the two.

The next step in the process, after the film is made, depends on whether it is to be fixed while still wet or after drying. As no other tissue but blood is ever examined after drying, we may regard the wet methods as logically preferable, and describe them first, though they are later historically.

Wet methods (Muir's and Gulland's).—These methods were devised in order to gain a better knowledge of leucocyte structure than could be got from dried films. In both methods the cover-glasses, as soon as they are separated from one another, *and before the film has had time to dry*, are dropped, wet side downwards, into the fixing solution. It is well, however, before doing so, to wait a few seconds, the actual time depending on the thickness of the film, so that the red corpuscles, which are inevitably pulled out of shape by the traction of the cover-glasses, may have time to return, by their own elasticity, to their proper shape. They do this before they begin to dry, and it takes some practice to determine the exact moment at which the fixing should be done, for if they are allowed to dry completely, the object of the method is of course defeated.

The fixing agent used by Muir (1) is a saturated solution of corrosive sublimate in ¾ % salt solution, in which the films are left for about half an hour. They are then thoroughly

washed in ¾ % salt solution, taken through successive strengths of alcohol, with salt added in the same proportion to the weaker strengths, up to the full strength of spirit; then transferred to water, stained, dehydrated with absolute alcohol, cleared with xylol, and mounted in balsam. The whole process, if properly carried out, takes about an hour, and the special disadvantage of it is that unless the washings in salt solution and spirit are very thoroughly carried out, crystals of sublimate are apt to appear in the finished preparation, and the presence of sublimate in the films may sometimes interfere with the staining. This can, however, be obviated by adding a little iodine to some of the higher strengths of spirit.

Muir's method gives very beautiful pictures of leucocyte structure, but is too long for ordinary clinical work. Some time ago (2) I devised a process which greatly shortens the time necessary, and gives results as good as those gained by Muir's method. The fixing agent used is a solution of a mere trace of sublimate in equal parts of absolute alcohol and pure ether, and I found it often convenient to dissolve the eosin used for staining the red corpuscles in the alcohol of the fixing agent. The formula is therefore—

Absolute alcohol saturated with eosin,	25 c.cm.
Pure ether, ...	25 c.cm.
Sublimate in absolute alcohol (2 grm. to 10 c.cm.), . . .	5 drops (more or less).

The films remain in this solution for three or four minutes, are then washed rapidly in ordinary water, and next stained for one minute in a saturated watery solution of methylene-blue, or for whatever time is necessary in hæmatoxylin. One minute in Mayer's hæmalum is usually sufficient. They are then washed in tap water, dehydrated in absolute alcohol, cleared in xylol, and mounted in balsam. The time taken is about seven minutes. It is of course not necessary to add the eosin to the fixing solution, and not advisable to do so if the reagent has to be carried in the pocket in an imperfectly stoppered bottle. If it is omitted, that or any other aniline dyes can afterwards be used, and staining for half a minute with Ehrlich's triacid solution gives excellent results.

The disadvantage of these two methods is the very rapidity of fixation. Some at least of the red corpuscles are certain

to be fixed before they have resumed their proper shape, and this may give a beginner the idea that poikilocytosis exists in a case where it is not present. It is absolutely necessary, therefore, to control these methods by examining either fresh blood or blood drawn through a drop of 1 or 2 p.c. osmic acid solution, as a fluid mount. Their advantages are, in the case of my own method, rapidity, considerable flexibility, and in the case of both methods, good fixation of blood-plates, and especially good fixation of leucocytes, both nuclei and granules. For such conditions as the different forms of leucocythæmia, for instance, the wet methods are infinitely preferable to the dry. The leucocytes are fixed in their proper shape, and are not flattened into lamellæ as they are in dried films.

Dry methods.—As a necessary preliminary to all these, the film must be dried, and if the film is of just the proper thickness, it may be allowed to dry in the air, but if it is at all thicker than usual, the drying should be hastened, either by waving the cover-glasses to and fro in the air after they are separated, or by holding them over some source of heat, at a safe distance.

The main advantages of drying the film are (1) that the shape of the red corpuscles is well preserved; (2) that the granules in the leucocytes are more easily demonstrated than in wet films; (3) that the dry films can be preserved for any length of time. The disadvantages are (1) that nuclear structure is blurred and lost to a great extent both in resting cells and in those undergoing karyokinesis; (2) that all such details in the leucocyte body as the centrosomes and the spongioplasmic network, cannot be made out; (3) that the leucocytes are not seen in their natural shape, but are flattened out in the process of drying.

The methods of fixing the dried film are very numerous.

Heat.—This was first used by Ehrlich, and may be applied in several ways.

(*a*) The film may be passed rapidly about twenty times through the flame of a Bunsen burner or spirit lamp. In the hands of a skilful operator who is used to doing it this may occasionally give good results, but it is not to be recommended.

(*b*) The cover-glasses may be placed in an oven which can be kept at a constant temperature—by far the best method of applying heat.

(*c*) The cover-glasses may be placed face downwards on a copper or other metal slip, supported by a tripod, and heated by a Bunsen or spirit lamp. After the heat has been applied for about a quarter of an hour, all parts of the plate have reached a fairly constant temperature, and one can find out by letting fall on to the plate small drops of water, xylol, etc., the points on the plate where the heat is sufficient to make these fluids boil. The cover-glasses are then placed *face downwards* on the plate at the point where the desired temperature exists, and are left for such time as may be necessary.

The degree of heat which is to be applied to the films in one or other of these ways, and the length of its application, varies very much, according to the stain which is to be used thereafter. Ehrlich's original prescription was a heat of 110° to 120° C. for two hours; and this he still (3) regards as necessary if differential stains, such as his eosin-aurantia-nigrosin mixture, are used. For the ordinary stains, such as eosin and hæmatoxylin, Chenzinsky's solution, or the triacid solution, he now regards 110° for one half to two minutes as sufficient. For eosin and hæmatoxylin this is quite correct, but I confess I have never been able to get really satisfactory triacid preparations unless the films had been kept at 110° for at least five minutes, or better even ten minutes. Others have found this also; Cabot (4) brings his hot-air bath to a temperature of 150° C., which takes about ten minutes to do, and then removes the cover-glasses. The greater heat applied gradually in that way has much the same effect as a more prolonged exposure to a lower temperature. Engel (5), who uses the tripod and copper plate, heats at a temperature of 139° C. for half an hour. It is easy to get this temperature, as it is the boiling point of xylol, but Cabot's method of reaching the higher temperature gradually is certainly preferable.

Preparations which are overheated show it by refusing to take up stains properly, while those which are under-heated stain deeply, diffusely, and, where triacid is used, generally in the tone of the acid fuchsin; neither the nuclei nor the granules of the leucocytes are clearly brought out, and it is not uncommon to find a white ring round the red corpuscles, where the imperfectly fixed plasma has shrunk away from them, or they from it, while in very bad cases the hæmoglobin may of course be dissolved out altogether.

Heat applied in one or other of these ways is, of course, an excellent fixative, probably the best of all for dry films if it be carried out in a hot-air bath for a long time, but it has the disadvantages that it is not every one who has the means at hand of keeping a hot-air bath at a constant temperature, while the method with the Bunsen and copper plate is also somewhat complicated, demands considerable practice in its application, and is liable to go wrong only too easily, as it is after all only approximately that one can gauge the temperature, and it is often difficult to know when the plate has reached its constant temperature. Ehrlich's reason for using heat as a fixative, in the first place, was that, as is well known, he regards the staining of different parts of the leucocytes, for instance, with acid, neutral and basic aniline stains, as a micro-chemical reaction, and therefore he considered it of importance that no chemical agent, which might have disturbed this reaction, and no solvent, should be applied to the film before staining. Into this question I do not at present propose to enter, but I would note that the degree of heat employed has a very considerable influence on the staining of certain of the granules.

Chemical Reagents.

1. *Absolute alcohol and ether* (Nikiforoff).—The films are placed in a mixture of equal parts of these, for from half an hour to two hours. The shorter time suffices for eosin and hæmatoxylin, the longer for triacid, but the fixation is not very satisfactory in either case, and is apt to be curiously unequal. Absolute alcohol alone may be used for five minutes or more, but only for eosin and hæmatoxylin.

2. *Corrosive sublimate in saturated watery solution* may be allowed to act for half an hour on the dried films, but it does not act in this way nearly so satisfactorily as in wet films, and requires an inordinate amount of washing out.

3. *Osmic acid.*—This is best used in the form of its vapour, and in cases where a vapour fixation is desirable, has been replaced entirely by formalin. Osmic acid is dear, its solutions are difficult to keep at full strength, and it does not allow a free choice in the matter of stains afterwards.

4. *Formalin.*—(*a*) The *vapour of formalin*—formaldehyde—may be used to fix dried films, and does it extremely well.

An exposure for ten minutes in a properly closed and appropriate vessel gives very much the same results as my own formalin method, but it necessitates the use of a specially devised vessel if the films are made on cover-glasses. The rough and ready apparatus that one can rig up with a glass or earthenware vessel and pieces of wood [see Ritter (6)], can only be used if the films are made on slides, a practice to which I am not partial, as it is extremely difficult to get evenly distributed films in that way.

(*b*) *Formalin in alcoholic solution* was first used by Benario (7), whose solution was—Formalin, 1 part; water, 9 parts; absolute alcohol, 90 parts.

The films were left in this for one minute, and then stained in eosin and hæmatoxylin. Benario intended the method for use with malarial blood, and the parasites are brought out very well with it. But it is of no use for triacid staining, nor for other differential stains, as the granules of the leucocytes are not brought out. I saw that the method was promising, and after a number of experiments found that the best fixation of which formalin in alcohol is capable was given by a mixture of formalin ten parts, absolute alcohol ninety parts. The cover-glasses are placed with the film downwards in a watch-glass containing a few drops of this solution, are left there for five minutes (longer if desired, but five minutes is sufficient for films of a proper thinness), then washed rapidly in tap water, stained as desired, rapidly washed again in water, dried, with gentle heat if desired, and mounted in balsam. If triacid solution is used, it should be allowed to stain for from two to three minutes, not longer.

The alcoholic formalin solution may be kept indefinitely made up ready for use, if the bottle be properly stoppered.

Higher percentages of formalin may be used, but there is no advantage in doing so, the fixation is as good and takes place as rapidly with a 10 per cent. solution as with one of 30 per cent. Beyond the latter percentage the formalin gets the upper hand of the alcohol, and begins to show the same effect in causing swelling of the red corpuscles which it has when used in watery solution.

The advantages of this method of fixation are its rapidity, its simplicity, its certainty, and the fact that it almost exactly reproduces the appearance of a preparation fixed by heat for

a long time. The time from making the film to examining it need not be more than ten minutes, the only apparatus required is a watch-glass and a water-supply, one gets exactly comparable preparations of different conditions, and the leucocyte granules, especially the neutrophile granules, are brought out quite as well as in preparations made in Ehrlich's original way. The only difference between films fixed in this way, and those made by Ehrlich's method, when they are stained with triacid, is that the red corpuscles are more red in colour than when the films are fixed with heat. I have used the method constantly for six months, and have examined every kind of blood disease, in hospital and in private practice, and have found the method uniformly successful and satisfactory.

I have also used it constantly for examining films of pus, sputum, etc., and find that I get much cleaner and sharper pictures than in films fixed by heat.

With regard to the stains to be used for blood-films made in this way, the most generally useful and clinically sufficient are, eosin and hæmatoxylin or hæmatein, the triacid solution, and eosin and methylene-blue.

Eosin and hæmatoxylin are useful for getting a general impression of the character of a film, and for malarial blood, for which they are excellent.

The triacid solution, of orange G., acid fuchsin, and methyl green, is by far the best and easiest means of learning as much as possible from a single film. It does not, however, bring out nuclear structure, blood-plates, nor blood-parasites, as well as eosin and methylene-blue.

Eosin and methylene-blue, used one after the other, as I have described above, or mixed, as in Chenzinsky's solution, is capable of giving by far the most beautiful and instructive pictures. All leucocyte granules, even the neutrophiles, are well brought out, while nuclear structure, blood-plates, the malarial organism, and any bacteria present in the film are shown with much greater clearness than with triacid, while the basophile granules, which are left unstained by triacid, are deeply stained by the methylene-blue. It is somewhat difficult, however, to manage the combination. The methylene-blue is very apt to overstain, and to drive out the eosin, and Chenzinsky's solution, which was devised to meet this difficulty, must be allowed to act for a long time on the

films. Thionin, which does not overstain so much as the methylene-blue, does not give such good results.

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A METHOD OF CLOSING LARGE CAVITIES IN BONE

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EVERY surgeon is well aware of the difficulties which attend the treatment of disease of the long bones in so far as concerns the closing of the cavities left by operation. If the cavity be above a certain size there is a tendency for it not to be completely filled up by granulations, and we are left to deal with a discharging sinus. On the other hand, should the cavity close, it is only after a long period elapses, and the resulting cicatrix is a deeply depressed one.

The chief points aimed at in the following method are firstly, filling of the cavity, secondly, covering the deficiency in the surface of the part by sound skin, and lastly, shortening the period of convalescence of the patient. The essence of the procedure consists in the use of blood as a filling agent and in obtaining skin-coverings by lateral flaps of a ribbon-shape attached at both ends.

Neither the plan of filling, nor that of covering, the gap is original, but I have not come across any records of the combination of these measures, and I think that the following notes of a case in which the above treatment was carried out are likely to prove of interest.

Wm. R., aged thirty-eight, football maker, was admitted on the 27th May 1898 to the ward under my charge in the

Western Infirmary. He was suffering from a somewhat acutely septic condition of the right leg.

Past history.—When aged seven years he was struck on the right leg with a stone, and an abscess which subsequently formed over the tibia was opened. Following this, sinuses formed at both the upper and lower ends of the tibia, and these discharged and healed off and on for a period of seven years, when a sequestrum (flat) was removed through an opening near the inner tuberosity. As a result of the long continued osteitis he was left with a thickened and deformed tibia and with several cicatrices in the skin of the leg, but notwithstanding this

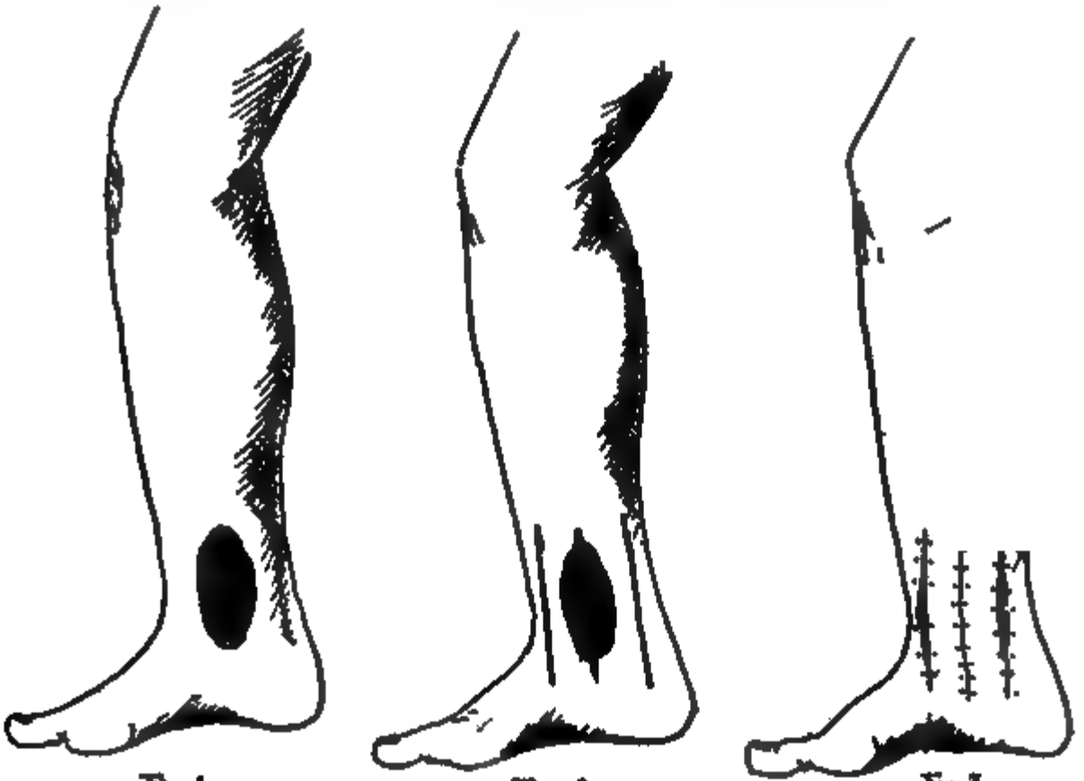

Fig. 1. Fig. 2. Fig. 3.

he was able to use the limb freely, playing football or walking thirty miles easily. He suffered from traumatic dislocation of the right ankle on two occasions at the age of eighteen and twenty years respectively. At the age of twenty-four years he had pneumonia from which he "nearly died." He kept well till November 1897, when he received a kick on the lower part of the affected leg. This was followed by an abscess which burst and then healed. Ultimately periostitis, latterly becoming acute, set in, and in January 1898 an incision evacuated pus. Subsequently (March 1898) some cario-necrotic fragments were removed from the lower end of the tibia. While convalescing

from the latter operation, the wound became septic and he sought admission to the Infirmary.

The *family history* reveals no taint of tuberculosis.

Condition on admission.—The foot and lower third of the leg were reddened hot and œdematous, and from an opening above the internal malleolus issued a profuse purulent discharge. On probing the opening carious bone was felt. The ankle joint was more or less fixed. He was suffering a good deal of pain and could not bear any weight on the limb. Three days after admission chloroform was administered and the sinus was freely opened up; a quantity of cario-necrotic tissue was removed by the spoon and gouge.

The cavity which was left occupied the lower fourth of the tibia and the interior of the astragalus. In addition a large part of the inner and a smaller part of the anterior surface of the tibia were wanting.

On looking into the cavity the position of the ankle joint was marked by a line of fibrous connective-tissue between the tibia and the astragalus, and as a result of the removal of the diseased tissue limited movement of the joint was now possible.

The cavity was stuffed with iodoform gauze and allowed to granulate.

When the walls were completely lined by healthy granulations the cavity was packed with chips of decalcified cow bone. The chips broke down and came away as a slimy yellowish fluid resembling pus. A second attempt was made, much less bone being used; small pieces were plastered on the wall as grafts. These grafts, however, softened, and while one or two adhered, the majority came away in a semi-fluid condition.

Aug. 9th.—To save time the following treatment was carried out:—The circulation in the limb having been controlled by an Esmarch's bandage, the cavity was washed out thoroughly with watery solution of carbolic acid (1-100). The skin was raised from the anterior and posterior lips of the mouth of the cavity in the form of two ribbons of over an inch in breadth and with attached ends; the edges next the opening were carefully pared. The granulations lining the cavity were then scarified. The skin ribbons were closely sutured over the opening, and a few stitches put in loosely to prevent excessive gaping of the incisions of relaxation.

Cyanide and wood-wool-tissue dressings were applied and the Esmarch's bandage taken off.

The skin wounds healed by first intention, with the exception of the anterior incision where the gaping had to close by granulation.

As mentioned above, the cavity occupied the interior of the astragalus and of the lower fourth of the tibia, while its opening measured roughly 2½ in. vertically by 1¼ in. transversely.

There is now over the lower part of the opening in the bone a well-marked depression, which, however, is covered by normal skin. The parts at the seat of operation are quite sound and the man can bear his weight on the foot in walking, a performance which he accomplishes fairly well with the aid of two sticks. A small superficial abscess connected with bare bone is present just below the middle of the inner surface of the leg. This followed a strain of the leg which happened a fortnight ago.

The cavities left in bone either by the removal of tuberculous foci (1), or after sequestrotomy in cases of non-tuberculous osteitis (2), have been allowed to fill with blood at the time of the primary operation, but the risk of infection of the blood-clot is such as to dissuade one from trying the method. No such objection holds in a case like that recorded here, as the healthy condition of the granulation lining was seen to persist for a period of two months before the measure was put in force.

The subsequent contraction of the clot results in a depression in the surface of the limb, but this is not present in an inconvenient degree, and the depressed area being covered by true skin is not liable to the ulcerative changes which one frequently sees occurring in cicatrices which are present on the lower extremities of those who belong to the working classes.

The method of closing the cavity by skin-flaps is the same as that employed for ulcer of the leg by Fleming, in the Glasgow Royal Infirmary, in February 1895. This method has since been published by Wallis (3), and by Maylard (4). The latter, in his article in the "Glasgow Hospital Reports," puts on record his having used a skin-flap to close a gap in the cranial wall in a case of hernia cerebri.

Note.—After the above had been written, œdema set in in the lower part of the leg, and was followed by fluctuation over

the site of the former cavity. A small opening having been made, a quantity of watery blood escaped. This did not apparently come from the bony cavity; it became serous by the following day, and finally purulent. Subsequently, the abscess at the middle of the leg was freely opened up and the bone gouged away till the medullary region was reached. This was occupied by granulation-tissue, in the course of the removal of which the upper end of the former cavity was opened. Its contents were firm whitish tissue, and a portion examined microscopically showed granulation-tissue becoming fibrous, and forming a contrast to the soft cellular tissue removed from the upper cavity. The sections showed none of the features of tuberculosis, and the condition is evidently a lighting up in areas of the old osteo-myelitis.

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MOTOR MENTALISATION

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A SUPERFICIAL observation of the workings of the brain cortex cannot fail to impress the observer with the fact that there is a close connection between the motor and mental functions. Upon closer examination, it is seen that these associations of the motor and mental activities become so complex and so inextricably blended with one another that the conclusion is forced on one that there must be motor mentalisation in almost all our mental acts.

In the condition of sleep where consciousness is lost and cerebral activity is relegated to the lower and reflex motor centres, the muscular tonus is lost and the whole muscular system is relaxed. No sooner, however, does sleep give way to consciousness than the muscular tonus returns—in other words, the brain cortex sends down a steady flow of energy, and a consciousness of motor power returns with the knowledge of existence. This is certainly a variety of motor

mentalisation of which we are often keenly aware, when it is deficient in quality or quantity, when, as one terms it, we feel out of form, and the muscular relaxation produces or is a part of the feeling of mental lassitude and disinclination to motor activity. On the other hand, when the subject is in vigorous health, the adjustment between muscular potentiality and thought is so perfect that the readiness and capacity for movement are represented in the very attitude of the body.

The act of voluntary attention has its motor equivalents inhibitory and excitory. The motor actions are complex and affect even the cardiac and respiratory reflexes. During profound attention the respirations become slower and deeper, the cardiac systole is more prolonged. Together with a generally firm state of the skeletal muscles, the muscles of expression are in characteristic action. The orbicularis muscles are in tension, and the eyes are directed by co-ordination of the ocular muscles towards the subject exciting the attention. Further, the eyes, in transmitting impressions of objects to the brain, involuntarily trace the outlines of these objects, and the sensations thus originated tend to fix the impressions in the receiving cortex.

Even memory has its motor representation, as the act of remembering implies the reproduction of an image, as, for instance, where the eyes trace insensibly the outlines of words, letters, phrases, scenes and persons, and the resulting brain sensations, by stimulating the association of ideas, assists in recalling the representation of the desired subject.

Will power implies control both motor and mental. To think of an act is to set in nascent action the muscles about to be actively employed, and to inhibit that act is to control the motor activities. In forming a mental judgment we have to exert attention and memory, and it has already been demonstrated that there is motor action involved in the discharge of these functions.

Speech without motor action is, of course, an impossibility, and the power of speech is furthered and accentuated by muscular movements of the body and limbs. Control by mechanical means the motor activities of an orator and at once you obstruct his flow of thought and power of expression. Without their motor equivalents the expression of the emotions would be impossible. It has been demonstrated that in hypnotic states varying emotions can be induced in the subject

by the operator, who, by placing the muscles of the subject in suitable combinations and positions, suggests the required emotion. The mental act is, in short, induced by means of the motor equivalent.

Every action and position of the healthy subject is pregnant with potential activity. The expression, the attitude, sitting or standing, the walk, conveys to the observer the mental equivalent of the subject observed.

If such is the case in health it is not wonderful that in disease, and especially in mental disease, the motor functions should suffer in proportion and sometimes out of all proportion to the mental functions. This is, of course, a wide subject—too wide for the scope of this paper; it will therefore be sufficient for purposes of illustration to observe more particularly some of the motor changes which occur in melancholia. A glance at a patient the subject of mental depression suggests a condition of lowered vitality. The face lacks variety of expression, the facial muscles are flattened and relaxed, and, especially in the lower third of the face, pulled down, acted upon by gravity. The attitude is slouching and lacking in potentiality. The walk is dragging and apathetic, and every movement is lacking in the finer co-ordinations. Although consciousness is present, the muscular consciousness, the feeling of self-confidence inspired by a healthy tonus of the muscular system, is wanting. The attention when attracted is incapable of concentration and the muscular equivalents of expression vanish with the mental failure. Memory is deficient and cannot be assisted by motor action. Speech is slow and halting, and a deaf observer could draw but little inference from the negative activity of the muscles of expression. When we come to more complex movements, such as writing, playing billiards, tennis, golf or any act which implies fine co-ordination, we find a failure of power. Nor do the cardiac and respiratory functions escape the general lethargy. It is the exception to find a melancholic patient whose cardiac systole is not weakened or whose respirations are not shallow and feeble.

We have seen in health that in addition to motor innervation there is motor inhibition, and this power of inhibition we may also find impaired in melancholia. Involuntary muscular movements are apt to occur without apparent reason or external stimuli. It is admitted that weakened cells in

addition to giving deficient energy can also discharge too easily, so that motion when initiated is apt to lead to dissipation of energy.

Such symptoms, then, roughly illustrate the motor failure which occurs in a typical case of melancholia and suggest that the treatment of private well-to-do cases of melancholia, and especially the after-treatment when recovery is well advanced is deficient in certain respects.

In the ordinary asylum wards the required treatment of the motor disorganisation in melancholic patients is fully met by work in the gardens, laundry and kitchen. Such is unfortunately not the case among the well-to-do, for whom it is often hard to find suitable and interesting occupation. With the ordinary medical and moral methods of treatment of melancholia I have no complaint, but it is no uncommon experience to find a melancholic patient well advanced in recovery, when viewed from the mental aspect, whose motor functions are far from normal, and so long as such a condition lasts recovery cannot be perfect or complete. The tendency of a prolonged attack of melancholia is to produce a want of condition throughout the muscular system of the patient—a deficiency of respiratory capacity, of cardiac power and endurance upon ordinary exertion. It is a curious fact, but one which can be proved by observation, that the complete return of the motor power is generally the last stage of recovery, and until the muscular system is in tone there is always a lack of that feeling of self-confidence which, as I have before noted, goes hand in hand with the feeling of perfect health. We have just now a gentleman who suffers from recurrent attacks of profound melancholia. When well he is an average golfer. After an attack and long after all his symptoms of depression are apparently gone, co-ordination is so imperfect that his powers as a golfer are extremely poor. Though apparently well mentally to an ordinary observer, those who know him best are aware that there is still a mental deficiency, a want of sociability until the power of co-ordination fully returns. The letters of another gentleman who suffers from recurrent attacks of irritability, depression and suspicion show in a marked manner his mental state. When depressed his writing is smaller, more cramped, and the lines are crooked and irregular. He himself is conscious of the change and attributes it to a

feeling of numbness in the fingers and a failure of sight at these periods.

Another case, a lady, made apparently a good recovery but she dreaded the thought of going home, giving as her reason that she had a want of self-confidence when in the presence of strangers, or in a crowded street. Her muscular powers were deficient, and this was the only deficiency which could be detected after careful examination. Her attack had lasted for two years, and for the greater period of that time she had been in the above-mentioned unsatisfactory condition. Many changes of treatment were tried, sometimes with such benefit that several times she appeared to be on the point of recovery, but some slight and apparently insignificant cause as often threw her back to her former condition. Finally, a mild course of gymnastics was prescribed, and she shortly afterwards left for home, having completely regained her feeling of self-confidence. This result was, I believe, largely assisted by the improved condition induced by the exercises in the muscles of the trunk and upper limbs.

In such cases as I have mentioned, where the acuteness of the mental symptoms has passed, and where the patient is beginning to take an interest in the progress of recovery, there is a field for the employment of exercises which will tend to shorten convalescence, and especially tend to overcome the deficient muscular tone induced by the disease. Deep forced inspiratory efforts followed by complete and forced expiration, slowly performed, not only increases respiratory capacity but by mechanical action assists the circulation of the lungs and of the whole body, and so directly acts upon the heart, while increased oxygenation of the blood stimulates ultimate cell metabolism. Slow forcible contractions of the muscles of the limbs and trunk, upon which movements the attention should be concentrated, increases muscular tone directly and indirectly. Directly, by acting upon the nerve cells through the faculties of attention and will, and indirectly, by producing changes in the muscular fibres set in action. The moral effects of such treatment should not be lost sight of both upon the patient and those in charge, tending as they do to keep alive interest at a critical period of recovery. There would appear to be no high-road to the successful treatment of mental disease, failing which one has to fall back upon, and the best results are apparently to be gained by, patient attention to even the most trifling details.

Digests

NON-MALIGNANT ULCERATIONS OF THE ŒSOPHAGUS, WITH ESPECIAL REFERENCE TO SIMPLE PERFORATING ŒSOPHAGEAL ULCER[1]

By BEATRICE RUSSELL, M.D.(Brux.), L.R.C.P. & S.Ed.

SIMPLE ulceration of the œsophagus in one or other form is a by no means uncommon occurrence, although the more severe forms, and consequently those in which correct diagnosis is most important, have been but seldom met with. This rarity of occurrence may, however, be largely an apparent one, as the subject is one to which little attention has been drawn, while in many cases the condition gives rise to slight symptoms only. Moreover, the œsophagus is seldom examined as a matter of routine in every *post-mortem*, so that possibly affections of that structure are more common than would appear from the number of cases put on record.

In English and American text-books of medicine description of simple ulcerations of the œsophagus are either entirely absent or short and incomplete. Rolleston (1) in Clifford Allbutt's "System of Medicine" devotes a page to the subject; but Osler (2) in his "Practice of Medicine" and Fitz (3) in the "Twentieth Century Practice" merely mention one or two forms of non-malignant ulceration. Birch-Hirschfeld (4) mentions ulceration of the œsophagus only incidentally, under the section on perforation. Pepper's (5) "System of Medicine" has a section on ulceration of the œsophagus, but it is short, incomplete and indefinite. Among the earlier books Tanner's "Practice of Medicine" (6) has a short description of the treatment, but in Hughes Bennett's "Principles and Practice" of 1868 simple ulceration of the œsophagus is not mentioned. Ewald (7) in his "Diseases of the Stomach" mentions as causes of cicatricial stricture at the cardia syphilitic ulcers, tubercular ulcers, and *ulcus rotundum œsophagi*, adding that he has in his possession a drawing of an ulcer of the last-named variety from the portfolio of the late Professor Frerichs. Rosenheim (50) has a short section on the subject.

The best descriptions of non-malignant ulceration of the œsophagus, so far as I have seen, are to be found in the writings of Haas (8), Debove (9), Berrez (10), and Courtois-Suffit (11). The last three writers, however, confining themselves, in the works quoted, to descriptions of *simple perforating œsophageal ulcer.*

[1] Paper read at the Edinburgh Women's Medical Club.

Maylard (49) also definitely recognises the condition and devotes a short section to it.

Under the term non-malignant ulceration of the œsophagus may be included a number of varieties. Briefly enumerated these are as follows :—

1. Ulcers associated with inflammation of the œsophagus.
2. Ulcers due to corrosion.
3. Ulceration from external causes.
4. Ulcers the result of the presence of foreign bodies.
5. Ulcers associated with various of the exanthemata.
6. Syphilitic ulceration.
7. Tubercular ulceration.
8. Ulcers associated with duodenal ulcers in cases of burning.
9. Ulcers forming in the foot of diverticula.
10. Simple perforating œsophageal ulcer.

1. The ulcers belonging to the first form are usually multiple and superficial. They and the associated inflammation may give rise to great dysphagia for a time, but they heal easily and rapidly under suitable treatment. In Hamilton's "Text-Book of Pathology" (12) there is an illustration of multiple superficial ulcers of the œsophagus which had given rise to a very irritable condition of the œsophagus. These superficial ulcers seldom involve more than the epithelium and the surface of the fibrous layer of the mucosa.

2. *Ulceration due to corrosion* depends for extent and degree on the strength and amount of the corrosive. The diagnosis is not difficult, as either a history is obtained, or the mouth and fauces bear evidence of the cause. Ulceration, if present, is usually in a more or less continuous line from the fauces to the stomach.

3. Under the heading *ulceration from external causes* is included ulceration from the pressure of tumour, *e.g.* an aneurism or mass of enlarged glands. The ulceration may or may not perforate the œsophageal wall. The difficulty in diagnosing these cases largely depends on whether the causal factor has been already recognised.

Under this heading may also be included ulcers—perforative or otherwise—resulting from the presence near the œsophagus of caseous glands, or of tubercular abscesses arising from such glands or from caries of the spine. If in the case of a caseous gland pressing on the œsophagus and causing ulceration, there is no marked evidence of tubercular disease elsewhere, one's diagnosis would be no easier than if one were dealing with an idiopathic ulcer. In the case of the bursting of an abscess into the œsophagus one usually would have the discharge of pus as well as other symptoms to guide one. Such ulcers are usually

termed *tubercular*, but apparently more on account of their cause than as the result of a microscopic examination of their structure.

Zenker (13) described two cases of œsophageal ulceration secondary to gland infection, and Voelcker (14) reported a case —not much more, however, than a *post-mortem* record—in which a mass of caseous glands had opened into the œsophagus at the level of the bifurcation of the trachea. The patient was a boy, aged nine, who was admitted to Great Ormond Street Hospital with septicæmia and cystitis, and who died seven days later. There had been no œsophageal symptoms, but the above condition was found *post-mortem*.

Voelcker also speaks of a case in which he had noted marked hyperæmia of the œsophagus opposite a large caseous gland.

Acute abscesses may also discharge into the œsophagus.

4. *Foreign bodies* in the œsophagus, apart from the obstruction they cause, may lead to serious results from their immediate action, as in cases where the swallowing of a sharp body has brought about death from perforation of the aorta. The ulceration resulting from the lodgment of a foreign body also may lead to the perforation of a blood-vessel, or may lead to a communication with the air passages.

One rather curious case may be given as an example of this occurrence (15) :—

A convict, seven months after entrance into prison, stated that he had swallowed a bad half-crown before coming in. He had had vague dyspeptic symptoms since then, and vague pain in the chest, and a slight cough without expectoration. One month later he vomited large quantities of blood and died within two hours.

Post-mortem.—The coin was found incorroded. It had apparently just been displaced from a shallow pouch in the œsophagus, where it had caused the formation of a circular ulcer with dark edges, the same size as the coin itself. From this ulcer there was a perforation into the aorta at the commencement of the thoracic part, which was the cause of the fatal hæmorrhage.

5. Ulceration of the œsophagus in connection with any of the exanthemata has been rarely recorded. Œsophagitis occurs occasionally, and may be accompanied by slight ulceration of the mucous membrane. Ulceration, apart from œsophagitis, apparently occurs rarely.

In one case of scarlet fever (16) in a girl of four years, who had been unable to swallow for some time before death, there was found, *post-mortem*, sloughing at the fauces and three irregular superficial ulcers in the œsophagus one inch from the stomach. There was some redness of the adjacent mucous membrane.

Osler (2) mentions ulceration of the œsophagus as occurring in typhoid but rarely. Ulceration is said occasionally to occur in small-pox, but this is doubted by many observers. In very rare cases diphtheritic ulceration extends to the œsophagus.

6. *Syphilitic ulceration* is rare, and, according to Fitz (3), usually is an extension from the pharynx. It may occur in the lower parts of the œsophagus from the breaking down of a gummatous mass.

7. *Primary tubercular ulceration* occurs very rarely.

Zenker (13) reports one case where the ulcer was evidently the result of swallowing tubercular sputa.

Fitz in the "Twentieth Century Practice" says that Flexner was recently able to collect only twenty-one cases, and that his analysis showed that the tubercular invasion of the œsophagus was by extension from neighbouring parts,—such ulceration, in fact, as I have mentioned as occurring from external irritation.

8. Humphrey (16) recorded two cases in which ulcers were found in the œsophagus in children who had received burns. In both cases there were also duodenal ulcers. The motions had been loose and dark for a few days, and the children had been hawking and vomiting before they died.

9. The presence of *traction diverticula* in the œsophagus is a not uncommon cause of ulceration. Two varieties of acquired diverticula are met with — pressure diverticula and traction diverticula. The former are usually situated on the posterior wall, while the latter are to be found anteriorly and laterally. Traction diverticula are always due to a previous inflammation in the neighbourhood of the œsophagus. Inflammation in a group of glands near the œsophagus may lead to fibrous connections been them and the œsophagus. Later, the glands tend to atrophy and the new fibrous tissue to contract, leading to a pulling outwards of the attached part of the œsophagus. These traction diverticula are never large, but it is common to find an ulcer at the foot of them.

Haas in his monograph (8) gives a careful record of one such case :—

A brewer, aged fifty-six. In youth he had an "inflammation of the chest," since then had been healthy. A year before admission he began to have difficulty in swallowing, which gradually became worse. On admission there was found a stricture of the œsophagus 23-25 cm. from the teeth. When he tried to swallow, he at once began vomiting and coughing.

There was also found to be catarrh of the lungs.

Rectal feeding was employed, but the patient lost ground.

The œsophagus was opened opposite the thyroid cartilage, and a small catheter introduced into the stomach.

For one day the passage of food through this was well borne, but each day any attempt at ingestion brought on coughing and vomiting of bloody foul-smelling masses. The patient sank and died.

Post-mortem.—In the œsophagus below the level of the left bronchus there was found a funnel-shaped diverticulum, at the bottom of which lay a calcareous concrement. In and around this diverticulum in the œsophagus was an ulcerated area beginning 2 cm. above the bifurcation of the trachea and extending downwards for about 7 cm., embracing the whole circumference of the tube and perforating the left bronchus. The margins of the ulcer

were sharp, and showed no infiltration. The glands at the bifurcation were shrivelled, and there was much old inflammatory tissue in the neighbourhood.

One is apt to be misled in these cases by the sound passing into the diverticulum and being arrested there, otherwise the symptoms seem to be pretty much those of the (apparently) idiopathic ulcer.

10. The *simple perforating œsophageal ulcer*, corresponding to the gastric ulcer, is the most practically important, as well as the most interesting form of ulceration met with in the œsophagus, and for this reason, that along with considerable difficulty in diagnosis one has a very fair chance of curing the condition if it is diagnosed in time and properly treated.

Cases of simple ulcer have been reported at intervals during the last century, but at the same time various eminent observers have recorded their doubts as to the existence of such a condition. Cruveilhier, who was the first to give a definite clinical description of gastric ulcer, makes no mention of ulcer of the œsophagus.

Albers (17) gives a good description of a simple ulcer of the œsophagus, exactly similar in character and behaviour to that of the stomach. Vigla (18) admits the existence of such ulcers. Rokitansky (19) speaks of it as an excessively rare phenomenon.

Knott (20) refers to this form of ulceration; while, on the other hand, Zenker and Ziemssen (21) pronounce against the existence of such a condition, being of opinion that cases previously published were open to severe criticism.

Morell Mackenzie (22) considered that cases previously recorded had been too incomplete to enable one to decide whether this condition really did exist.

Quincke (23), however, by the report of three *post-mortem* records, established the occurrence of the ulcer beyond a doubt, his records at the same time not being of much clinical value.

Debove (24) seems to have been the first to diagnose and cure simple ulceration. His cases are quoted in full in Berrez's monograph on the subject, and he has an excellent *resumé* of the subject in his own book on ulcer of the stomach (9). I have seen no other record of a diagnosis having been made of simple ulcer, with the exception of one published in 1850, which, however, was not successfully treated.

In the more recent English and American text-books of medicine there is only a cursory mention of the condition. Osler, in the 1898 edition of his book, has no mention of this form of œsophageal ulcer, and in the "Twentieth Century Practice" (3) it is merely mentioned that corrosive ulcers from regurgitated gastric fluids may be a cause of perforation.

Clifford Allbutt mentions it as one form of non-malignant

ulceration. In the "Manuel de Médecine' (11), however, there is a short but good account of the condition.

In the early records of cases the absence of microscopic examination makes the diagnosis doubtful, but, notwithstanding, the naked-eye appearances and history are often sufficient to make it almost certain that it is correct.

In 1784 two cases with *post-mortem* examination were reported, one by Simmons (25) and the other by Gartshore, with *post-mortem* notes by John Hunter (26). In the latter case there was difficulty in deglutition, and the patient was treated by doses of 2 oz. of quicksilver, which "cleared the passage" in a remarkable way!

The following cases are those of which the most complete records have been given:—

In the "Pathological Transactions" of 1850-52 Trotter (27) reported a case of which the following is an abbreviated record:—

A woman, aged twenty-five, a housemaid, was admitted to hospital in January. General health had been good. Three months before admission she began to be troubled with nausea and vomiting after meals, and a month after these symptoms appeared she began to have difficulty in swallowing. This continued till her admission. She also complained of pain between the shoulders, aching and digging in character, and also sometimes pain in the epigastrium. She felt as if her food stuck at the top of the sternum.

The case was diagnosed cancer of the œsophagus. On March 2nd she began to be teased by a constant cough. On March 3rd she was found pulseless with livid lips, and shortly afterwards she died.

Post-mortem.—The stomach was vertical, the pylorus being one inch below the anterior superior iliac spine. The pericardium was distended with a thin, acid, yellow fluid, and showed a coating of fibrin. An opening from the œsophagus was present. The œsophagus showed simple ulceration in its entire circumference from the bifurcation of the trachea to half an inch above the diaphragm. *There was no contraction of the canal.* In addition to the pericardial opening there was another into a small ulcerated spot at the root of the left lung separated from the cavity of the chest by adhesions.

Flower (28) in 1852 reported the following case:—

A painter, aged fifty-one, began to complain (a week before death) of deep-seated pain at the top of the sternum. He had been depressed for some time on account of being short of work. About one week later he had an attack of profuse hæmatemesis, bright red and frothy, after which he lost consciousness. He was brought to hospital and revived after treatment. Stated that he had had a cough for many weeks, but no expectoration. Next morning, while recumbent, he vomited a pint of arterial blood, in which was a clot the size of a lemon, and died a few minutes afterwards.

Post-mortem.—Stomach was large and distended by a clot which exactly filled its cavity. Round the cardia were some fissures in the mucous membrane, partly lying in the stomach and partly in the œsophagus. Three inches above the cardiac orifice on the left side was a perfectly circular opening, $3\frac{1}{2}$ lines in diameter, the edges slightly elevated but sharply cut, and bevelled from within outwards. On the inner surface of the descending part of the arch of the aorta, but higher than the œsophageal ulcer, was a ragged opening in the aorta, $1\frac{1}{2}$ lines wide.

In 1855 Wilks (29) reported a case in which communication was established between the trachea and œsophagus through ulceration of the latter viscus. Binet (30) recorded a case in the same year, the nature of which, however, is doubtful.

Park (31) in 1856 also reported a case somewhat similar to that of Wilks :—

A man, aged sixty-one. Illness began by a violent hæmatemesis. At that time his liver was large, hard and tender. He made a slow recovery from the effects of the hæmatemesis. Six months later he began to complain of indigestion and difficulty in swallowing. He had pain in the epigastrium diffused over the right and left hypochondria, and also between the shoulders. Pain was worse after eating, which was attended by the feeling of a lump in the throat. He had constant eructations, with a taste of blood in the mouth and difficulty in swallowing solids. Alarming hæmatemesis came on again. No stricture could be felt on passing a probang, and there was no blood on the instrument. The taking of solids seemed to cause a spasmodic effort to eject them. The dysphagia increased, and there were attacks of hæmatemesis at intervals. Bronchitis then came on, and he at last became unable to swallow even liquids, which produced a combination of coughing and vomiting. The cough became incessant, and he died nine months after the first hæmatemesis.

The *post-mortem* showed cirrhosis of the liver, a rough ragged ulcer in the œsophagus at the bifurcation of the trachea, two inches in length. It had opened into the right bronchus, where a part of the lung was hollowed out, into a cavity the size of a nutmeg. *Microscopically* the ulcer was simple, showing scarcely a trace of inflammatory reaction. There was no formation of fibroid tissue and no lymph or corpuscles present.

Theron (32) in 1862 reported a case with ulceration into the aorta. The clinical symptoms, however, were not very definite.

A similar case was reported by Petit (33) in 1864.

A soldier, aged thirty-four, apparently in perfect health, when cleaning his arms one day fell to the ground vomiting large quantities of blood. His conduct had been good and his habits regular, and for the previous six months he had not a single day's exemption from duty on account of illness.

Post-mortem.—Strong adhesions were found between the aorta and œsophagus at the level of the fifth and sixth dorsal vertebra for an extent of about 6 cm. There was an ulcer of the œsophagus 2 cm. by 12 cm., opening by a small hole into the aorta.

The edges of the ulcer were irregular and grayish in colour, while the edges of the opening were thin. Petit considered it unlikely that the ulcer was spontaneous, and thought that possibly a small bone had lodged there.

Morell Mackenzie (34) reported a case in 1867 where there was perforation into the trachea. This, however, he rather repudiates in his later writings as not having been sufficiently examined.

Hawtrey Benson (35) in 1873 reported a case which he called one of perforating idiopathic ulcer of the œsophagus. No microscopic examination, however, is appended. In this case the ulcer had perforated into the pleural cavity. Cancer had been diagnosed.

Quincke (36) in 1879 reported three cases, the pathological

report on which can hardly be doubted. Two of these were in women who had been treated for gynecological troubles. The third was a man who had a stricture of the œsophagus which had been diagnosed as cancerous; but in whom *post-mortem* the stricture was found to be simple, and cicatrices were found in the stomach and œsophagus.

Unfortunately Quincke's cases have practically no clinical history appended, and so merely serve to prove the existence of these ulcers.

Quincke later reported a case where a callous ulcer of the stomach had invaded the œsophagus.

In 1882 a case was reported by Zahn (38), in which the diagnosis of pernicious anæmia had been made, but which showed, *post-mortem*, an ulcer of the duodenum, the floor of which was formed by the head of the pancreas, and an ulcer of the œsophagus with some thickening around the œsophagus.

In 1883, 1884, and 1885 Vulpian (39), Chiari (40), and Janeway (41) reported cases which were not diagnosed *ante-mortem*. In 1883 Finlayson (42) reported a case in a man aged twenty-three, whose illness began by vomiting from no apparent cause. Later, blood appeared in the vomited matter, and, later still, attacks of vomiting and coughing occurred immediately after taking food. *Post-mortem* there was found a perforation from the œsophagus to the left bronchus, while the left lung was hollowed into cavities filled with gangrenous pus. In 1885 a somewhat similar case was reported by Carrington (43).

Robertson (44) in 1884 reported a case where the condition, as it apparently often does, simulated gastric ulcer, and in which the ulcer presented the classic anatomical features of gastric ulcer.

The patient vomited even liquid foods, the vomited matter being like coffee grounds, while there was sharp pain in the upper part of the chest during and after ingestion of food, radiating to about 2 inches above the nipples and worse on the right side.

Hiccoughing and pain to the right of the ensiform came on before death, which occurred six months after the commencement of the illness.

Post-mortem the only lesion found was a small round ulcer in the lower part of the œsophagus, involving the mucous, submucous, and muscular coats, with clean-cut thin edges.

A case reported by Reher (45) is interesting from the completeness of the history given. Summarised, it is as follows:—

A labourer, forty-seven, dated beginning of illness to the end of 1879. He then had severe pain in the epigastrium, and copious vomiting usually one to three hours after food.

He improved under treatment.

In the spring of 1882 again severe pain and vomiting after food set in, which continued until his admission to hospital in December 1882. During the ten days previous to his admission the vomiting had been excessive. The vomited matter was brownish-red in colour and the motions tarry.

On admission the pain was found to be situated in the epigastrium, and posteriorly in the region of the lower dorsal and upper lumbar vertebræ. Pressure in the epigastrium was painful.

From that time patient had periods of feeling well, alternating with periods of pain and vomiting. The pain was worst at night, and principally between the last dorsal and first lumbar vertebræ.

In February 1883 the vomiting became worse, and retching began whenever the patient swallowed food. In spite of this, however, he felt well.

At this time a sound was passed for the purpose of washing out the stomach. It was found to stick 15 inches from the teeth. Smaller bougies were, however, passed successfully, which seemed to improve the condition. The patient died on April 21st.

The *sectio* showed a large circular ulcer of the œsophagus, just above the cardia, passing through mucous membrane and muscle, and showing a diverticulum behind, the floor of which was formed by surface of the liver. Into this diverticulum evidently the first sound had passed.

The œsophagus above this ulcer, as far as 3 cm. above the bifurcation of the trachea, showed a grayish-white shining surface of scar tissue, with small islets of normal mucous membrane interspersed.

The mucous membrane of the stomach was red and swollen, but showed neither ulcer nor cicatrix.

A case of sudden perforation of an œsophageal ulcer into both pleural cavities was reported by Lindemann (46) in 1887. The patient previously had suffered from digestive troubles and severe cardialgic attacks. The perforation occurred as he was walking home after having had a hearty meal in a restaurant. He died next morning after great sufferings, principally caused by spasms of the diaphragm. The ulcer, situated 2 cm. above the cardia on the posterior wall of the œsophagus, had exactly the appearance of a gastric ulcer.

A case of multiple small ulcers in the lower part of the œsophagus was recorded by Guitéras (47). The symptoms were difficulty in swallowing, vomiting after food, and dull pain between the scapulæ. The patient, a woman, aged forty-four, never vomited blood.

Henoch (48) records a case in which an ulcer of the œsophagus was a cause of melæna neonatorum.

It is apparently, however, to Debove (24) that the credit is due of recognising and successfully treating cases of simple perforating ulcer of the œsophagus. At the same time it may be observed that, of the two cases recorded by him, the first when it came under his care was already cicatrised, while in the second, although the ulcer was not healed, there was evidently a considerable formation of fibrous tissue around it.

1. The first of his two cases, a man aged fifty-four, came to him complaining chiefly of hunger and of not being able to eat. The history was that twelve years before, he began to have sharp pain at the point and towards the upper part of the sternum, with great difficulty in eating and drinking. These acts were painful, and were accompanied by regurgitations, mouthful by mouthful, as he took his food. He had no pain except when he tried to eat. In the two following years he vomited matter like coffee grounds every two or three days. He had vomiting also six years later. All this time he suffered

from pain behind the sternum and between the shoulders. This pain came on if he tried to swallow, and lasted from a quarter to half an hour. He had no pain while fasting. He was several times sounded. When he came under Debove's care he had had no vomiting of blood for several years and the pain was less intense. Two strictures of the œsophagus were found, and Debove considered that they were the result of cicatrisation of simple ulcers, and accordingly dilated them. After dilatation had been completed the patient was taught to use a bougie himself. Three months later there was no tendency to recurrence.

2. The second case, a man of fifty-five, was admitted to hospital in a state of collapse after a severe hæmorrhage. There was a history of severe hæmorrhages dating sixteen years back, with later on history of obstruction in the œsophagus and pain at level of the eighth dorsal vertebra. Before the hæmatemesis which led to his admission, there was great difficulty in swallowing even liquids. He had been previously treated by stomach lavage, and practised it himself until he began to find that his sound would not pass. Debove treated this case as he had done the first, with the result that the patient was cured. He died two years later from a perforated gastric ulcer which had become latent, and *post mortem* a circular cicatrix was found in the œsophagus 5 cm. above the cardia, showing fibrous strands, radiating to the upper and lower parts of the œsophagus.

Maylard (49) also fully recognises the conditions and refers to various cases.

In perusing the above reports of cases, one is struck in the first place by the obvious fact that they merely form a collection of those cases in which the condition proved fatal. In only one or two instances were the cases correctly diagnosed before death, and only in the cases recorded by Debove did the ulcers show the healing process.

It is probable, then, that the absence of records of non-fatal cases is due to errors in diagnosis rather than to non-occurrence of the condition, and probably light might be obtained on the subject from the early histories of patients who come for treatment on account of simple stricture of the œsophagus.

Another point which strikes one is the frequency with which the patients succumbed when the ulcer had neither involved nor perforated any vital structure. In this respect the behaviour of the ulcer differs from that of ulcers of stomach and duodenum. Death in such cases seemed to be due to exhaustion caused by continual vomiting or by inability to swallow food.

Pathological anatomy of simple (idiopathic) perforating œsophageal ulcer.—Perforating ulcer of the œsophagus presents practically the same anatomical features as ulcer of the stomach. If it be small in size, it retains the classical appearance of sharply-cut shelving edges; if large, the ulcer tends to become annular, surrounding the tube, or sometimes irregular. It may or may not perforate all the coats of the œsophageal wall. The condition of the periœsophageal tissue seems to

depend on the length of duration of the ulcer. In some cases, such as Flower's (28), the ulcer perforated the aorta before any new fibrous tissue had formed between the tubes. In other cases we read of dense adhesions between the œsophagus and neighbouring organs.

If cicatrisation has taken place, the ulcer is represented by a puckered white radiating cicatrix similar in appearance to healed ulcer of the stomach.

Œsophageal ulcer occasionally occurs concomitantly with gastric or duodenal ulcers. In such cases the diagnosis is still more difficult.

Ætiology.—The above records do not throw much light on the ætiology of simple perforating ulcer. Several facts, however, may be gathered from them.

The condition differs from gastric ulcer in the following points:—(1) Males are much more frequently attacked than females. In 23 cases 17 were males, 6 females. (2) It is a disease of middle and advanced life. The patients' ages ranged chiefly from forty to sixty-seven years. In only 5 cases were the patients under thirty-five. (3) Anæmic conditions are not mentioned as concomitants of the disease.

Syphilis and habits of intemperance were noted in several of the cases, but there is no evidence that either of these is an important ætiological factor. In some of the cases the ulcer appears to have caused death in persons who had previously presented no pathological symptom.

Pathology.—The pathology of the condition rests in the same position as that of ulcer of the stomach.

Quincke named his cases *Ulcus œsophagi ex digestione*, and believed them to be due to the action of regurgitated gastric juice. Similarly another writer entitled his paper *Peptic ulceration of the Œsophagus.* Debove and Berrez, however, believe that this view of the causation both of gastric and œsophageal ulcers is untenable, and hold that the cause is still undiscovered.

Symptoms of simple œsophageal ulcer.—It is very apparent from the cases recorded that there is no symptom absolutely pathognomonic of œsophageal ulcer. Unfortunately, too, in many instances the condition gives rise to no symptoms, or to symptoms so slight as to be entirely overlooked until the condition of the patient suddenly passes beyond the power of treatment. Still, in many instances it is quite evident that the patients' lives might have been saved had the cases been diagnosed and proper treatment undertaken.

The first symptoms usually appear to be pain on or after taking food, and vomiting of the matter ingested. The pain in most cases is situated either between the shoulders, behind the sternum, or in the back at the level of the lower dorsal and

upper lumbar vertebræ. Pain is also occasionally present in the epigastrium. The pain usually begins as the food is being swallowed; sometimes, however, it is not complained of as occurring so early.

Later on in the disease the course of events is that the patient begins to have difficulty in ingesting food, the food being at once regurgitated from the œsophagus as soon as the act of deglutition has taken place. At the same time hæmatemesis, more or less severe, is a common symptom. Berrez says that the hæmorrhage is never so severe as it may be in gastric ulcer, from the fact that the œsophageal vessels are so much smaller than those which run on the surface of the stomach. In the cases recorded where hæmorrhage has been sudden and fatal, the cause was always perforation into the aorta or one of its branches.

In spite of the apparent obstruction in the œsophagus, usually at this stage no actual constriction can be discovered on passing a sound.

The condition may then either begin to progress towards cure, or may cause the death of the patient, the fatal termination being due either to perforation of some important structure or to the debility caused by the hæmorrhage and inability to swallow or retain food. Perforation, if it occurs, is most commonly into the air-passages. Perforation of the pericardium, pleura, or one of the great vessels has been reported.

If the ulcer goes on to cicatrisation, a severe stricture may be the result, and may cause death of the patient from slow starvation. Thus the patient in the early stages of the disease may suffer from *apparent* stricture, and later require treatment for *actual* stricture of the œsophagus. The cases of Debove are good illustrations of the latter stage of the disease. In each of these cases the patient was evidently not far from a fatal termination when treatment was commenced.

Diagnosis.—Cancer of the œsophagus and ulcer of the stomach are the diseases with which simple œsophageal ulcer has been most frequently confounded, and in many of the cases recorded it would have been very difficult to make any other diagnosis. Hæmorrhage from the œsophagus may be due to varicose veins. This condition is chiefly seen in cases of cirrhosis of the liver. The possibility of diagnosis between simple perforating ulcer and the other forms of non-malignant ulceration would almost entirely depend upon the presence or absence of a definite history or diathesis, which might lead one to suspect on the one hand the effects of a foreign body or irritant poison in the œsophagus, or, on the other, ulceration of a tubercular or syphilitic nature. In sounding the œsophagus one must bear in mind

the possibility of being misled as to the presence or absence of stricture, by the sound passing into a diverticulum. Perforation of the air-passages would be indicated by the patient immediately beginning to cough after swallowing food, and by later the development of a septic condition in the lungs.

Treatment must be carried out on general principles. The ulcerated area must be saved from irritation as much as possible by the giving of bland foods, aided by rectal alimentation, and if the condition be obstinate, by the formation of a gastric fistula. If there be any suspicion of syphilis, antisyphilitic remedies should be tried in the first instance.

If a stricture has formed, dilatation should be performed, provided the ulcer appear to be healed, but if hæmorrhage is still going on, and if there is much pain, it would appear to be wiser to give the œsophagus rest for a time before undertaking dilation. In some cases surgical intervention by way of the posterior mediastinum might be of great value. After perforation of the air-passages there might still be some hope for the patient in the formation of a gastric fistula, but perforation of the pleura, pericardium, or aorta must almost of necessity prove fatal.

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THE PATHOLOGY OF RAPIDLY FATAL SUPERFICIAL BURNS.[1]

DURING last year Bardeen had a rare opportunity of studying the much debated question of the cause of death in extensive superficial burns. Five children, whose ages ranged from sixteen months to eight years, were admitted to Johns Hopkins Hospital, so severely burned that all died, the first about three hours, the last about nine and a half hours, after the accident.

[1] A review of the pathology of superficial burns, with a contribution to our knowledge of the pathological changes in the organs in cases of rapidly fatal burns, by Charles Russell Bardeen, M.D. Johns Hopkins Hospital Reports, vol. vii. No. 3, 1898.

Post-mortem examinations were performed very soon after death, so that the tissues were obtained before any changes had time to take place. The morbid appearances were so much alike in all the cases that one description suffices for all. In all the bodies the damage, although superficial, was wide spread. The epithelium was wholly peeled off at places, but there was no charring anywhere. Œdema was marked in the subcutaneous connective tissue, especially of the face and eyelids, and a few cutaneous ecchymoses were observed. The lymphatic glands were partially enlarged.

The changes observed in the thorax were slight congestion and œdema of the lungs, the thymus and lymphatic glands.

In the abdomen the intestines were moderately distended, and the visceral peritoneum slightly congested. The liver was pale and cloudy; while the spleen was enlarged and soft, its Malpighian corpuscles being prominent. The kidney was pale, its cortex cloudy, but the glomeruli were not prominent. The stomach and intestine, on being opened, showed marked swelling of the solitary and agminated follicles throughout, and many of them had a hyperæmic zone around them. The lymphatic glands in the abdomen were much congested and swollen. All the organs not mentioned above were found normal. The microscopic appearances, which are described in detail, may be summed up by saying that they consisted chiefly in "focal degenerations in the lymphatic tissues and liver, and advanced parenchymatous degeneration of the kidneys."

The writer lays special emphasis on the changes he has observed in the lymphatic tissues, changes which do not appear to have hitherto attracted much attention. Wherever lymphocytes were seen collected into nodular masses, from the small nodules in Glisson's capsule to the largest lymphatic glands, the following changes were noticed:—(1) A general œdema throughout the gland, especially at the germinal centres and in the swollen lymph sinuses. This was sometimes accompanied by slight venous and capillary congestion. This is the only stage at which active cell division was observed to take place, and here even it was doubtful. (2) The cells, especially at the germinal area, were swollen, their protoplasm coarse, granular and sometimes vacuolated; the nuclei at first were vesicular, but later took on the form of knotted irregular bands of chromatin, and soon went to pieces. (3) The germinal centres enlarged, the protoplasm broke up and became granular. No nuclei, fat or fibrin, were to be seen. (4) Certain large, flattened endothelial cells appeared, and by a phagocytic action engulfed the nuclear fragments and leucocytes. (5) In the Malpighian corpuscles of the spleen, and in the bone marrow similar areas of focal degeneration were seen. (6) In the alimentary tract also the

lymph follicles and nodules were strikingly altered. The tonsils and gastric follicles showed the same changes as the lymph glands, but in a more marked degree; and in the intestinal follicles, solitary and agminated, the same changes were readily remonstrable.

All these appearances the writer is inclined to attribute to the action of some virulent toxine, and he claims support for this view from the fact that changes almost identical have been observed in children dying from diphtheria and other diseases where the existence of toxines is known.

In discussing the general question of the cause of death and the morbid findings in cases of extensive burns rapidly proving fatal, the author passes in review the various explanations which have been suggested and critically examines the evidence for each.

It has long been recognised that the constitutional symptoms are out of all proportion to the severity of the lesions in superficial as compared with deep burns. If two-thirds of the surface of the body be implicated death almost certainly results, and fatal results are common when a much smaller area than this is damaged, especially in the case of children, who seem to be more susceptible than older persons. "There seems to be something specially noxious in the merely superficial burn."

The chief lesions hitherto noted have been hyperæmia of the organs of the thoracic and abdominal cavities and of the cerebro-spinal canal, sometimes accompanied by serous or even sanious exudation. These changes appear to take some time to produce, because if death be very rapid they are not observed. If the patient survive a few days, inflammatory signs may supervene in the intestinal canal, lungs, pleura, kidneys, or meninges. Ulceration may even follow in the stomach or duodenum. This was first observed by Long in 1840. The relative frequency of these lesions may be gathered from the following statistics by Schjerning. Out of 200 cases

Hyperæmia of brain	occurred in	49	per cent.
„ „ lungs	„	36·5	„
Nephritis	„	28·2	„
Pneumonia	„	27	„
Hyperæmia of intestines	„	22·2	„
Pleurisy	„	18·8	„
Ulcer of duodenum	„	12·4	„
Meningitis	„	10·5	„

The various theories to account for early death in these cases of extensive superficial burning, where no more gross pathological lesions than those mentioned have been found, have been based

upon interference with one or other of the many functions which the skin subserves.

The evidence for an interference with the *respiratory* function of the skin bringing on a fatal result is altogether insufficient.

More might be said for the idea that the *excretory* function is so far diminished that extra work is thrown upon other organs, but at best it is not a satisfactory explanation. This much appears certain, that death is not due to the absorption into the system of any poisonous substances which should, in ordinary course, be excreted by the skin. It may be due to the absorption of toxines formed in the destroyed skin, and Billroth gave the weight of his authority to this view.

Nor is there sufficient ground for believing that interference with the *heat regulating* power of the skin is the cause of the fatal result in these cases ; and except in so far as its destruction opens up paths of septic infection, the loss of the *protection* of the normal skin does not account for much.

As regards the *sensory* function of the skin, neither the destruction of the end-organs nor the amount of pain produced by the burn is sufficient to account for death. "Shock"—at best an ill-defined condition—from over excitation of the nervous centres has been accepted by many as a satisfactory explanation. To the author it would appear that the effect of burns acting through nervous channels is to cause an exhaustion dilatation of blood-vessels, but this in itself he considers a minor symptom.

Marked changes in the blood-vessels and their contents have, however, been observed. For example, hyperæmia of the viscera is the commonest lesion found in superficial burns and this may fairly be attributed to reflex vaso-motor changes.

A high temperature produces certain changes on the blood corpuscles. The red cells run together and ultimately break down, and the numerical loss of red corpuscles has been regarded by some as an important factor in producing death, but there is a good body of evidence against such an opinion. The hæmoglobin set free is deposited in the epithelial cells of the tubules of the kidneys and produces irritation of these organs and hæmoglobinuria.

The specific gravity of the blood is increased, to a very slight extent, by withdrawal of serum by blistering of the skin. There is an increase in the number of polymorpho-nuclear leucocytes, but the resistance of the cells to bacterial invasion is diminished, probably by the existence of toxines in the plasma. Thrombosis of small vessels is by many supposed to play an important part. Thrombi are found in the walls of the stomach and intestines, kidney, spleen and lungs, and extravasations of blood may take place in these situations, as

well as in the liver, brain and subcutaneous tissues. These changes are due to the altered corpuscles and the increase of blood platelets and probably to an increase of fibrin ferment in the blood, and they cause venous congestion and arterial anæmia. Such symptoms as dyspnœa, cyanosis, coma, weak pulse, cramps, anuria and lowered temperature so common, especially in children, might be accounted for by such lesions. The idea that the condition is one of toxæmia, on the other hand, has much in its favour, and several poisons have been separated. The chief of these are, a fibrin ferment, a body-like muscarin, and another belonging to the pyridine-chinoline group. Although the exact nature of the toxine is undetermined, the symptoms in superficial burns, apathy, sleeplessness, more rarely delirium, cramps, feeble pulse, irregular heart, cyanosis, albuminuria, diarrhœa and nausea are all so like those of other acute poisonings as to lend some colour to this explanation, and from the author's own observations he is inclined to look upon toxæmia as the most satisfactory explanation forthcoming.

A very exhaustive bibliography is appended to this paper.

Meetings of Societies

Edinburgh Medico-Chirurgical Society

THE sixth meeting of the seventy-eighth session was held on March 1st.

Dr W. Elder showed a case of absence of the fifth metacarpal bone, a case of localised skin eruption of seventeen years' duration, and a case of amyotrophic lateral sclerosis.

Dr Skirving showed a patient with Charcot's disease simulating double dislocation of hip-joint, and a patient with total necrosis of frontal bone.

Mr Stiles showed a child, aged seven months, with large hydrencephalocele; a boy, with infantile paralysis of both lower limbs, in whom he advised amputation at the seat of election on account of the extreme atrophy of the muscles of the thigh; and a child with coxa vera, greatly improved by anti-rachitic treatment.

Mr Stiles next showed viscera from a case of lympho-sarcoma of the peritoneum and abdominal glands which simulated abdominal tuberculosis clinically, but in which, *post-mortem*, were found secondary growths in the liver which appeared to have spread from the gastrohepatic omentum and the transverse fissure. The spleen was affected and the peritoneum was all

enormously thickened, and here and there nodular. One kidney showed hydronephrosis, with dilatation of upper part of ureter due to thickening of lower part of it. The interesting point was that the child had been running about, apparently quite well, within five days of admission to hospital.

Mr Stiles also showed thoracic viscera from a child who suffered from severe dyspnœa with expiratory stridor. The dyspnœa began five weeks ago, and the condition gradually became critical; there was nothing wrong with the larynx but it seemed probable that there were enlarged bronchial glands pressing on it, and as no improvement followed tracheotomy the obstruction was certainly below the level of the tracheotomy tube. The autopsy revealed a gland, the size of a walnut, pressing on the lower end of trachea. The greater stridor and dyspnœa during expiration was probably due to the weight of the chest wall pressing against the gland, and so against the trachea, during that part of the respiratory act, the weight being lifted off during inspiration.

Dr Skirving showed the following specimens: (1) sequestrum of entire frontal bone; (2) tuberculosis of mamma; (3) compound fracture of carpus.

Mr Cathcart exhibited a clinical research case.

Mr Cathcart read a paper on peritonitis as a cause of increased peristalsis in the rectum and other parts of the intestine. He began by referring to two cases where irritation round the rectum had caused severe tenesmus. One was a case of severe pelvic peritonitis, caused by strepto-coccus infection. The chief symptoms at first were severe colicy pain in the lower part of the abdomen and very frequent action of the bowel, leading the patient to suppose that she had been seized with dysentery. She died in thirty hours after the first onset of pain, and it was only at the *post-mortem* examination that the condition was understood. There had been no previous pelvic disease. She had, however, been menstruating during an attack of follicular tonsillitis just before the seizure, and the tubes had apparently become infected from the throat through the circulation.

The other case was one of gangrenous cellulitis round the rectum. In this case the expulsive spasms of the rectum were greater than those in the previous one, but the colicy pain was not so severe in the abdomen. The abscess burst through the vagina. Free incisions were made in the perineum, and extensive sloughs were removed. The patient, who was pregnant at the time, miscarried, but eventually made a satisfactory recovery.

Reference was then made to the frequent action of the rectum, and the patulous condition of the anus, seen in perirectal inflammation due to prostatitis.

The value of a knowledge of such symptoms as a guide to

treatment, was thus illustrated by the following case of pelvic suppuration following appendicitis. A young man, about ten days after a fœtid appendicular abscess had been opened in the right groin, showed symptoms of septic poisoning. Involuntary passage of fæces had been observed for a day or two, and his anus was quite patulous. The pelvis was carefully examined, and a bogginess in the pouch of Douglas, together with the other symptoms present, led to the diagnosis of pelvic abscess. Operation performed immediately led to the evacuation of a collection of fœtid pus in the pelvis, and the recovery was afterwards uninterrupted.

Attention was then drawn to peritonitis as a cause of increased peristalsis in other parts of the intestine. Grünbaum's experiments on rabbits had established experimentally the connection between the two. Nothnagel, who had previously from clinical observations suspected the probability of peritonitis producing this result, had requested Grünbaum to put it to the test of experiment, and now accepted the experiments as conclusive. The comparatively frequent association of a "loose" condition of the bowels with peritonitis had also been observed by Treves.

Previous to Grünbaum's experiments Gee had drawn attention to the probability of colic being present in acute peritonitis, and to its accounting for much of the severe pain in the early stages of the inflammation. This view Mr Cathcart thought was strongly corroborated by Grünbaum's experiments and Nothnagel's clinical observations.

Reasons were then given for the absence of distinct symptoms of increased peristalsis in many cases of general and pelvic peritonitis.

In conclusion, the following advantages of recognising the possible association of increased action of the bowel with early peritonitis were suggested—

1. Such cases as the two first referred to would be more easily understood and treated.
2. Obscure symptoms in other cases might be cleared up.
3. The probable presence of colic in peritonitis might be of the greatest service in diagnosis. Attention would no longer halt at the diagnosis of colic, but would pass on to try to find out the exact cause of it. Symptoms not previously considered important might thus come to be recognised as invaluable in differential diagnosis.

Dr Chalmers Watson read a paper on the etiology of gout. The paper was devoted to a consideration of the relationship of uric acid to gout, the observations being based on a series of original investigations on the physiology and pathology of uric

acid. The remarks on the physiology of that substance were based on an investigation of the blood and tissues of birds, snake and various mammals, a full account of which had been previously published (*B.M.J.* 1899, i. 205). The remarks made on the rôle played by uric acid in different pathological states had as their basis a series of observations on the presence of uric acid on the blood and tissues in different diseases—the conditions investigated including leucocythemia, croupous pneumonia, Bright's disease, and aneurism. Special consideration was given to a comparison of the part played by uric acid in gout and leucocythemia, and also to the relationship between the amount of uric acid excreted and the leucocytes in the blood. The following conclusions were arrived at:—(1) Uric acid is not normally absent from the blood of birds, and therefore the teaching of Garrod and Luff, arising from that premiss, would appear to be erroneous; (2) from the comparative frequency of uratemia in the absence of manifestations of gout, uric acid is not the all-important factor that is commonly supposed; (3) the greater amount of uric acid in the liver than in the other two organs seems to indicate that the metabolic processes there are more conducive to uric acid formation, and therefore the part played by it in the production of gout is a more important one; this is in accordance with the view expressed from clinical experience; (4) any views as to the uric acid excretion having a definite and constant relation to the number of white corpuscles in the blood are not to be entertained; (5) in view of the conclusions arrived at by Moore as to the frequency of uratic deposits, uratosis, that condition plays a more important part in hospital practice than we are usually led to suppose.

Glasgow Medico-Chirurgical Society

AT a meeting on Friday, February 3rd, Dr Hinshelwood showed for Dr M'Call Anderson a very typical case of psoriasis rupioides in a girl aged nine years.

Dr John Love showed (1) a case of tabes, with diabetes, in whom ataxia had developed with great rapidity. There had been some improvement under the "re-education method" of Fräukel. (2) A case of tabes with Charcôt's joint affection. In the latter case he asked for opinions regarding operative interference with a view to improving the powers of walking.

Dr Robertson discussed the question of connection between glycosuria and tabes in some degeneration of the centric nervous system.

Looked at clinically, he considered Charcôt's joint a condi-

tion resembling rheumatoid arthritis. He could not recommend operative interference in such a joint.

Dr Middleton objected to Charcôt's joint being described as a rheumatoid arthritis either clinically or pathologically.

Dr Love, in reply, remarked on the *atrophic* changes observed in a Charcôt's joint as well as hypertrophic changes, the amount of either present appearing to bear some relation to the type of joint affected. For example, in the case of the hip and shoulder atrophic changes were more marked, while in the knee and elbow, hypertrophy was the characteristic change seen.

Dr Love then showed a lad suffering from what he regarded as pseudo-hypertrophic paralysis. The case was an isolated one in a family of eight. Up to the age of fourteen years he had been well, and no symptoms had been observed. The case did not exhibit the characteristic method of rising from the ground.

Dr Robertson remarked on the late age, and the fact of it being an isolated case. He regarded the "climbing method" of rising from the ground as being the rule in "normal" cases, *i.e.* in cases beginning in the calf muscles.

Dr Middleton discussed the state of the muscles, and referred to a condition in them of "coagulation necrosis" as well as replacement by fat, and made the suggestion that the former probably preceded the latter. This might account for the hardness sometimes to be felt in certain muscles. With regard to the "climbing sign," he did not consider it at all pathognomonic of pseudo-hypertrophic paralysis, and referred to its occasionally being observed in spinal disease.

Aberdeen Medico-Chirurgical Society

A MEETING of this Society was held on February 2nd—Dr T. Milne, President, in the chair.

The President referred to the death of one of the members, Dr John M'Combie, and the Secretary was instructed to transmit a minute of sympathy to the relatives.

Dr John Gordon read notes of a case of spontaneous rupture of the heart, and demonstrated the specimen.

Dr Sherriffs read notes of a case of puerperal eclampsia treated by veratrum viride. The patient was a woman, age thirty-one, in her fourth pregnancy. The previous labours were normal, with the exception of the first, which was complicated by a "series of fits."

Convulsions began in the eighth month of pregnancy on Oct. 8th, 1898; they were repeated, and were very severe, coma being profound. On that date, five minims of liquid extract of

veratrum viride were injected into the forearm, and within fifteen minutes the pulse was reduced in frequency and became softer in character. The fits became less frequent and less severe, but did not cease till the afternoon of the 9th Oct. There was no recurrence of the convulsions till Nov. 27th, when patient complained of headache, sickness, severe epigastric pain and flashes of light before the eyes. Labour pains commenced at 9 P.M., and patient was found by Dr Sherriffs at 11.15 P.M. in a state of profound coma. An attempt at vaginal examination caused a convulsion. Seven and a half minims of the liquid extract of veratrum viride were injected hypodermically, and within half an hour the pulse-rate fell from 110 to 60, the pulse became much softer, and patient regained consciousness. The uterus was emptied, digital dilatation and turning being performed. The patient made a good recovery, and had only one slight convulsion after delivery. After the disappearance of the lochia, a trace of albumin was found in the urine.

Dr Sherriffs regarded the case as one of puerperal eclampsia, although it presented many features similar to epilepsy, and he laid stress on the beneficial effect of veratrum viride on the severity and frequency of the convulsions, and on the rate and tension of the pulse.

An interesting discussion followed, in which Drs Rose, Stephenson, Edmond and Cash took part.

Dr R. G. M'Kerron read a paper on "Antero-posterior Positions as a cause of Difficulty in Labour," with notes of two cases. This paper—which will appear in full in a later number of this Journal—gave rise to a long and interesting discussion, in which Drs Milne, Stephenson, Edmond, Rose, Marnoch and Findlay took part.

Meeting on March 2nd

A MEETING of this Society was held on March 2nd, Dr T. Milne, President, in the chair.

Dr D. Rennet read notes of an interesting case of Hodgkin's Disease: they will appear in full in a later number of this Journal.

Dr H. M. W. Gray showed a case of epithelioma, in which Coley's fluid had been used with great benefit.

In January 1895 patient had an epithelioma on the left side of the lower lip excised. A year later the submaxillary and sublingual glands were excised, and a year later still, extirpation of the lower cervical glands was attempted, but the operation was abandoned.

In December 1899 treatment with Coley's fluid was begun: hypodermic injections of the fluid were given, the dose being

regulated according to the reaction obtained. At this time a fungating mass was seen on the left lower half of the neck chiefly, over the sternomastoid, and extending up towards the lower part of the ear; it measured six inches by five. The area around this mass was much thickened and hardened. The neck was so stiff that he had to turn the whole body when he wanted to look to the side. He suffered severely from pain in the tumour and shooting up the side of the head. It prevented him from sleeping, and exerted a very depressing influence on him; his appetite was very poor. He was very weak, and had been confined to bed more or less for five and a half months previous to this date.

Result of treatment with Coley's fluid:—The pain is practically gone. The "roots" of the tumour, as patient puts it, seem much less, and he can move his neck freely from side to side. The fungating mass was scraped away till flush with the skin, but there is still a tendency to sprout out superficially. Patient's appetite has returned practically to what it was before his illness. He can now go out and walk about for four or five hours at a time. He sleeps the whole night through without soporifics.

Forfarshire Medical Association

THIS Society met in the University College, Dundee, on Wednesday, March 1st, at 8.30 P.M. Dr J. Mackie Whyte, vice-president, in the Chair.

Dr Mowat showed a man, aged thirty-eight, with molluscum fibrosum. The tumours had existed for five years and are distributed all over the cutaneous surface of the body, with the exception of the hairy scalp, palms of the hands and soles of the feet. (Case described in *Scottish Medical and Surgical Journal*, vol. iii. No. 3.)

Professor Kynoch showed two cysts of the ovary removed by posterior colpotomy from a patient of twenty-six years of age who had for three years complained of pelvic pain. One was a dermoid containing hair, bone, and a tooth.

Dr Emily Thomson spoke of a patient, aged twenty-eight, who had pain for two years, from whom she had removed a large dermoid.

Dr Halley read a paper on the treatment of perforating ulcers of the foot by nerve stretching; giving the notes of, and the result of this treatment in three cases.

In all, the ulcers had followed callosities and had gone on increasing; in two of the cases they were painless. In all three there was a certain amount of anaesthesia, marked sweating of the foot, or in one case, feet affected and a varying amount of

thickened epidermis. In none was there any affection of the central nervous system or of the circulatory system. In one case there was a history of peripheral neuritis due to alcoholism. The result in all three cases was distinct improvement and disappearance of the ulcer, but only for a time.

The various methods of treatment of this trouble were then considered, and the results following nerve-stretching reported by others were given.

The opinion was then expressed that if nerve-stretching was performed early enough, and if the patient was kept at rest a sufficiently long time, the results of this treatment might be more satisfactory, and that it ought to have at least a place in the treatment of perforating ulcers of the foot where there is no affection of the central nervous system or circulatory system.

Dr Buist and the chairman spoke on the paper, and Dr Halley briefly replied.

Mr Greig then read the first part of his paper on two years' experience in the surgical out-patient room of the Royal Infirmary, Dundee.

He first dealt with fractures, explaining that the number treated was limited and confined almost entirely to the upper extremity, because the majority were treated in the accident room. He gave in detail the number of fractures and the treatment he always adopted. He recommended the four-tailed bandage as against Sayre's method in the treatment of fracture of the clavicle.

He then gave the number of cases of carbuncle treated, their situations and the treatment adopted, and also of whitlow, of which the majority of his cases were in females.

The number of cases of syphilis and gonorrhœa and soft sore was also given, and the treatment adopted.

Obituaries

Emeritus Professor Sir John Struthers

IN the accounts which have appeared in the *Lancet*, *British Medical Journal*, and other journals, the outline of Sir John Struthers' career has been fully drawn, and it seems unnecessary to go over the same ground again here. We may, however, try to sum up a few of the leading features in his character as they struck some of those who were brought much in contact with him especially in recent years.

The feature which deserves to be placed first, because it explains much that might otherwise be difficult to understand, was his disinterestedness. He worked for the improvement of Medical Education, for the advancement of Medical Science, for the extension and better equipment of Hospitals, not for himself. This kept his mental vision clear, and strengthened his natural pertinacity. He saw distinctly what was wanted, and could not be easily turned aside till it was attained. But it goes far, too, to explain his influence. He might annoy people by his obstinacy, by his occasional irritability, by his outspokenness, but the edge of the opposition which he thus raised was turned by the knowledge that he was not working for his own hand, and that he generally proved in the long run to be right.

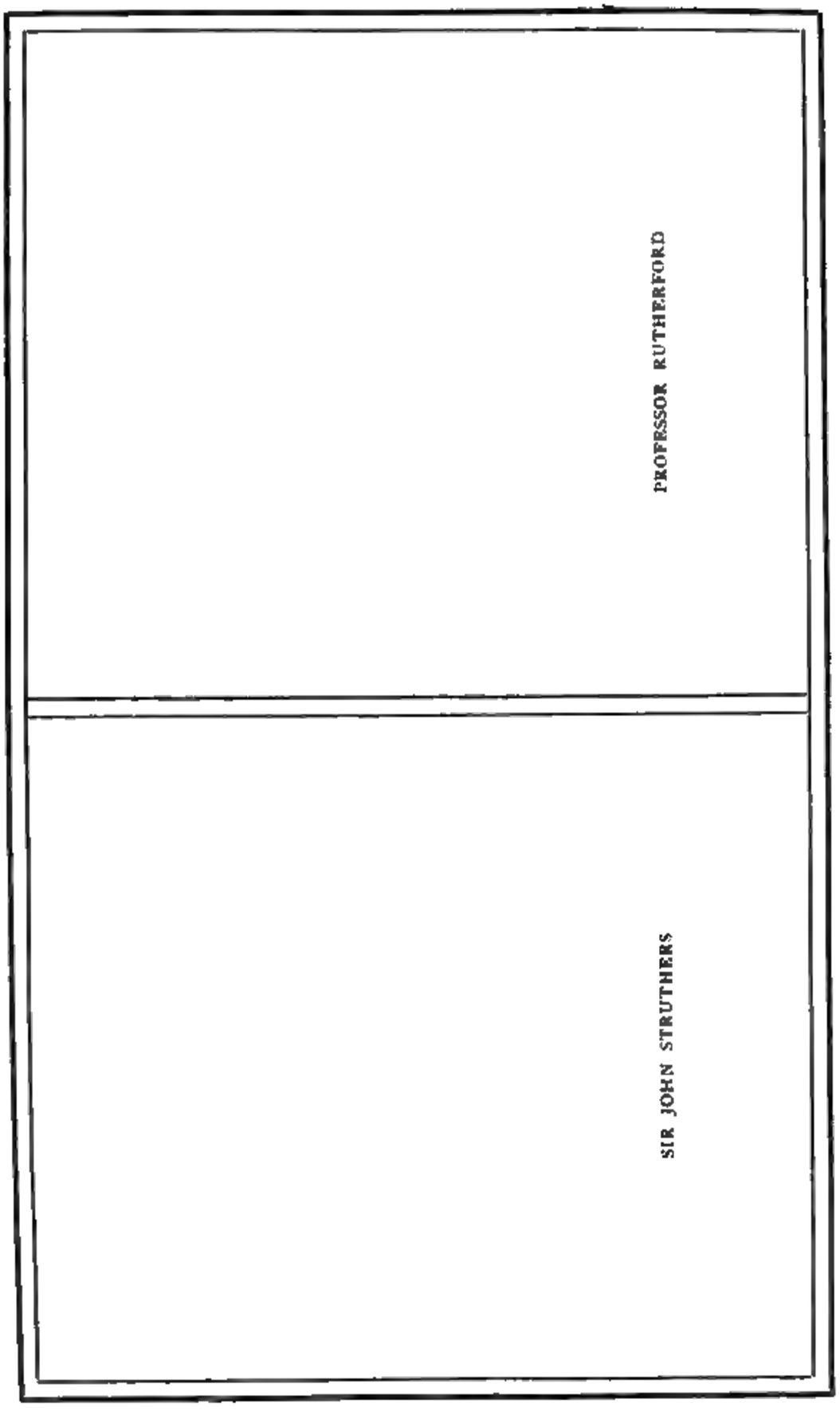
As a teacher his desire for the direct study of nature influenced all his views and methods. He was a leader among the advocates of more practical work and less lecturing for medical students. He laboured without stint of time and energy to improve museums, dissecting rooms, and laboratories, and never ceased to advocate and encourage original research.

His desire for improvement became such an established habit that he never could have got into a groove. With him as a manager or a chairman or even a member of committee, there was no possibility of standing still. The world was going on, and things must be brought up-to-date. This was so much a passion with him that the danger was rather that of improving too much than of not improving enough, but the fault was on the right side.

He will probably be remembered more as a teacher and a reformer than as an original investigator, but he did a great deal in this direction too. All his work was thorough and exact; although he did not break much new ground his papers will always be valuable for the reliability of the records which they contain.

In the last ten years of his life, which he spent in Edinburgh, he did more for his College, for the Royal Infirmary of Edinburgh, and for the Hospital in Leith, than had been done by any one man in a generation. Even at 76 we could ill spare him. Let us hope that the lessons of his life will not soon be forgotten.

C. W. C.


PROFESSOR RUTHERFORD
SIR JOHN STRUTHERS

William Rutherford, M.D., F.R.S.,

PROFESSOR OF PHYSIOLOGY IN THE UNIVERSITY OF EDINBURGH

FEW men of more distinctive personality have passed the portals of the University of Edinburgh than the late Professor of Physiology, and there has probably been no one in his own department by whose death the University has suffered greater loss. His strongly-built and well-knit figure, surmounted by a well-poised head, indicative of physical vigour and great force of character, made up a presence combining dignity and power; whilst an apparent hauteur of expression, along with a half-closed condition of the eyelids as if oblivious to everything going on about him, only made his personality all the more striking. Meeting him thus on a winter morning walking briskly to the University to deliver his morning lecture, a stranger might probably turn round and look after him, but would altogether fail to recognise the broad-minded and clear-headed man of science, the liberal supporter of every benevolent object affecting the welfare of his fellow citizens, and one of the most distinguished teachers of Physiology that ever adorned the walls of any British University. Like many of his countrymen who have become distinguished in the various walks of life, Dr Rutherford was a Border man, hailing from Jedburgh, and his name and family are still ably represented by a well-known practitioner in the neighbouring town of Kelso.

After a distinguished career as a student he obtained a gold medal for his Thesis, and shortly after began demonstrating Anatomy, thus laying the essential foundation in which was subsequently built his extensive knowledge of Physiology, afterwards to become his life's study.

With that intention he subsequently visited the Laboratories of the various Universities on the Continent having a reputation for the excellence of their physiological teaching, and especially those superintended by Dubois - Reymond, Pflüger and Ludwig. On his return to Edinburgh he was highly qualified to take up the duties of assistant to the Professor of Physiology, to which he was then appointed by Professor Bennet.

Students of those days will readily recall the admirable lucidity of thought and expression with which the class of

the Institutes of Medicine was conducted by Bennet; and Rutherford could scarcely fail to benefit by co-operating with such an ideal teacher. The class of practical physiology had just been instituted at that time, and the writer well remembers the first course which consisted of microscopic demonstrations of saliva, blood, milk, pus, and the various crystals found in urinary sediments. Fresh from the Continental schools, and bringing with him the knowledge of newer methods, Rutherford reorganised the practical class which in his hands quickly became an important course, including not only histology, but also chemical and experimental physiology.

His position as a physiologist was now fully recognised; and when the Chair of Physiology in King's College, London, became vacant, Dr Rutherford was selected for it. The admirable course of lectures delivered from that chair and those given as Fullerian Professor at the Royal Institution still further increased his reputation; and on the resignation of Hughes Bennet in 1874, Rutherford was appointed his successor, and returned to his *alma mater* to occupy a position of which the most worthy of its graduates might justly feel proud. It would be difficult to over-estimate the value of the work he accomplished during the quarter of a century he occupied this chair. From the time when he gained a gold medal for his Thesis he continued to give evidence of his capacity for original research; and his investigations into such widely different subjects as the rate of transmission of a nerve impulse, the histological appearances of striated muscle in the resting and contracted conditions, a theory of tone sensation in which the mechanism is compared with that of a telephone, and the very elaborate contribution on the physiological action of drugs on the secretion of bile, furnish proof of the wide range of his physiological inquiries. It was, however, as a teacher that Professor Rutherford has left an enduring name on the records of University life. Who of those privileged to listen to his brilliant systematic course can ever forget the manly presence, the earnestness of expression, the deep, full-toned musical voice, the perfectly arranged sentences, the lucidity of statement, the faculty of presenting tangled theories and puzzling physiological problems in a clear and intelligible form, and, above all, the gift of kindling enthusiasm in the breasts of those who listened to him! His was a logical mind, and every fact

and statement was presented in its orderly and most convincing sequence. Such collateral subjects as heat, light, and electricity, were taken up in a most attractive and interesting form; and the instruction which had been previously given in the course of physics or natural philosophy was again brought vividly to remembrance. It is only necessary in this connection to mention the graphic demonstration of sound waves by means of König's manometric flames, which his splendid voice enabled him so attractively to illustrate.

As a demonstrator and experimentalist he had few equals. Every diagram was presented to the student in the most telling and instructive form (often at the expense of much labour and care in preparation), and those representing microscopic sections were accurately drawn to scale in every particular.

The experimental part of his course was always the most laborious and trying to him, and it was a great relief to know that this part of his work was satisfactorily over. The most minute detail was carefully rehearsed, and failure made almost impossible. His demonstrations of the comparative safety of ether and chloroform in producing anæsthesia will probably never fade from the memory of those who witnessed them, and will serve as an example of how his lectures and demonstrations had a real and direct bearing on the daily practice of medicine and surgery. His lectures were carefully revised year by year, and senior students were frequently requested to be good enough to correct their last year's notes with reference to certain statements, concerning which, more recent research had rendered modification necessary. There was no difficulty, therefore, in explaining why the benches of the class-room of physiology were crowded to the door; or in believing that with his students Rutherford was one of the most popular professors in the University.

What has just been stated is probably well known to all in touch with University medical life, but when we speak of the man himself, he was really known and understood by the comparatively few. By a certain section of the community he was believed to be haughty, affected, supercilious; given to vivisecting the animals that licked his hand while he was torturing them; a person to be avoided at social functions, and written down in newspaper articles.

It is true that he had certain mannerisms of speech and gesture, but those who were able to look beneath the surface saw that these were only the cloak which concealed a very shy and sensitive disposition. He had formed a very high ideal of what was his duty to his students and his chair; and in striving to reach it, not only was every faculty he possessed strained to the uttermost, but rest, sleep, and even health, were sacrificed to this end. No wonder that under such a strain an overworked nervous system should show signs of succumbing, and difficulties and troubles arise in consequence. These for a time caused the greatest anxiety to his friends; but a prolonged holiday in more genial climes brought him home again refreshed in body and mind, and ready to resume the onerous duties of his chair with his wonted ability. The bitterness of the anti-vivisection controversy gradually died down when its advocates became aware that all experiments were conducted in a humane manner under anæsthesia; and latterly the question had ceased to trouble all but a small section of the community.

This notice would altogether fail in delineating the true character of the man if a reference to his large heartedness in the widest sense of the term were omitted. No man so well remembered kindness shown to him in his early days when fortune was not yet caught on the crest of the wave, or knew how to return it more liberally when success came. To his own friends he was kindness itself; but instances are not unknown to the writer, in which, during the anxious and long continued illness of some of the officials of his staff, the greater part of the expense was borne by the professor himself; and not a few students have had abundant reason to be grateful for the kindly advice, if not more substantial assistance which they received from their friend and teacher, in the retiring room of the class of Physiology.

Only those who knew him intimately discovered—and then almost by accident—what a generous heart beat within the breast of this distinguished teacher of physiology who now rests peacefully in the quiet churchyard of his native parish of Ancrum; and his influence and example will long remain as an incentive to those engaged in the pursuit of what is highest and best in scientific research, and philosophic inquiry after truth.

G. H.

Scottish Medical News

SCHOOL OF MEDICINE OF THE ROYAL COLLEGES, EDINBURGH.—The number of students attending the classes of the School during the Winter Session, now closing, was 1217.

LABORATORY OF THE SCOTTISH ASYLUMS.—The idea of having a Central Laboratory for the Scottish Asylums was so excellent, that we are sure our readers will be pleased to know something of the admirable work it has already done. The report by the Superintendent Pathologist, Dr Ford Robertson, has been sent out, along with the following report of the General Board :—

In issuing the accompanying report of its pathologist for the past year, the General Board of the Laboratory of the Scottish Asylums desires to express its great satisfaction with the position and prospects of the scheme, and with the very able, painstaking, and efficient work of Dr Robertson, alike in tuition and in research. His influence has already done much to encourage exact observation and careful investigation of disease on the part of the assistant medical officers of the associated asylums, and this can only result in greater benefit to the patients.

The financial statement shows that the sixteen associated asylums contribute £645 annually to the support of the scheme, and that this sum, after allowing for certain extraordinary expenditure and deducting liabilities incurred, but for which payment is not yet due, is sufficient for the present expenditure.

The Board is hopeful that all the asylums of Scotland will yet join in this most important work, for increase in the scientific knowledge of insanity must tend to a wiser and better treatment of the insane.

The Board has appointed Dr Rutherford of the Crichton Institution, Dumfries, to succeed Dr Yellowlees as chairman. Dr Clouston was reappointed treasurer, and also chairman of the Special Executive Committee, whose other members are Dr Campbell Clark, Hartwood ; Dr Robertson, Murthly ; Dr Oswald, Gartloch ; Dr Reid, Aberdeen ; Dr Urquhart, Perth ; Dr Yellowlees, Glasgow ; and the Chairman of the General Board.

Second Annual Report of the Superintendent Pathologist, 1898. —During the past year the work of the Laboratory has been carried on without interruption. Thirty-three reports have been made upon material sent for investigation. Five assistant medical officers of the Associated Asylums have received a laboratory course of instruction. Two other gentlemen, not attached to any of the Asylums, have also, with the permission of the Committee, been given the laboratory course. Asylum demonstration sets have been sent out 51 times. Assistance of various kinds has been rendered to several gentlemen who

have been making special investigations. It has been found necessary to issue only one memorandum during the year.

As regards original research, my work has consisted chiefly in a study of the normal histology of the cortical nerve-cells and their morbid alterations, more especially in cases of acute insanity. In this investigation I had the co-operation of Dr David Orr. A paper on the subject of our researches was published by us in the *Journal of Mental Science* of October. I have more recently published in the *Scottish Medical and Surgical Journal* (January 1899) a paper upon a new method of obtaining a black reaction in certain tissue-elements of the central nervous system (platinum method).

In April, Dr Ireland very kindly offered for the general uses of the Laboratory, the loan of a large number of British and foreign neurological journals. These are now in the Library, and have already been of much service to myself and others.

I have again to acknowledge the very able assistance that Dr David Orr has given me in the general work of the Laboratory. His recent appointment to the post of pathologist at Prestwich Asylum is a well-merited honour.

In looking back upon the work of the past year, I feel much gratified with the way in which the medical officers of most of the Associated Asylums have made practical use of the Laboratory. I believe that even more of the assistants would have availed themselves of the Laboratory course if their official duties had permitted, but that ten of them should have taken out the course within the first fourteen months of the existence of the Laboratory can scarcely be regarded as a poor record. The amount of material sent for report has been much larger than might appear from the statement of the number of reports issued, for in several instances what was practically a complete case-study was required. At the same time, I think that satisfactory discrimination has, as a rule, been shown in the selection of material for special report, and I cannot complain that I have been overburdened with work of this kind.

It is also a matter of much gratification to me that there is already unmistakable evidence that the Laboratory organisation is serving to stimulate interest in pathological work in the asylums. The large use that has been made of the demonstration sets of microscopic specimens (which illustrate the morbid changes affecting the different nervous tissues in mental diseases) is of itself proof of this statement. But there have also recently been some fruits in the form of published records of careful scientific investigations, to at least a small share of the credit attaching to which the Laboratory may not unjustly lay claim. In this connection, I need only mention the important work of Dr Findlay, lately Pathologist to the Crichton

Royal Institution, upon the choroid plexuses, part of the material for which was supplied from the Laboratory. Dr Findlay presented an account of this work to the University of Glasgow as his thesis for the degree of Doctor of Medicine, and was awarded the highest honour bestowed upon those receiving this degree.

I am confident that as time goes on the Laboratory will be able to serve, in a much larger measure than is yet possible, as a centre for the fostering of research in neuropathology in the Scottish Asylums. I hope to be able to make the Laboratory course of instruction gradually more and more complete, and therefore of greater service to those desiring to fit themselves for undertaking such research. It is becoming apparent that there are several directions in which the field of work of the Laboratory must, as a process of natural growth, ere long extend itself, in accordance with the requirements of fresh lines of neurological research which are rapidly increasing in importance. Thanks partly to Dr Ireland's generous loan, the Laboratory is already in a position to solve in a large measure the assistant medical officer's difficulty of finding out what has previously been done in any particular line of research that he desires to pursue. As the principal British and foreign neurological journals are now being obtained, and are available for purposes of reference, this difficulty should in the course of a few years practically cease to exist.

With the approval of the Committee, I propose to devote my spare time during the ensuing year to the completion of a text-book of Pathology in relation to Mental Diseases. After this task is finished, I think that the great practical object that this Laboratory is intended to advance would best be served by my taking up the pathological study of one of the clinical types of insanity with the co-operation of some of the superintendents and assistant medical officers of the asylums. Which form of mental disease should be chosen for such systematic investigation is a matter for the decision of the Committee.

New Books and New Editions

An American Text-Book of Genito-Urinary Diseases, Syphilis, and Diseases of the Skin. Edited by L. Bolton Bangs, M.D., and W. A. Hardaway, A.M., M.D. 2 vols. roy. 8vo, pp. 1821, with 20 coloured plates and 300 illustrations. London: The Rebman Publishing Co. 1898. Price 42s.

As stated in the preface this is an addition to the series of American text-books on medicine and surgery—text-books

which have been welcomed in this country as setting forth, both from the scientific and practical side, the views of surgeons on the other side of the Atlantic. It is the joint-work of a number of contributors—recognised authorities upon the subjects of which they treat—who have been allowed free expression of their individual opinion by the editors. The names of many of the authors cannot fail to give the volume a place of importance in surgical literature quite apart from its intrinsic value, and notwithstanding that the articles vary widely in their standard of excellence the general result is good, and is evidence that the editors have done their part conscientiously and well.

In that section which deals with genito-urinary diseases it is natural to turn first to those portions which deal with enlargement of the prostate and tumours of the bladder—subjects which have recently been the field of much research and discussion. The former has been written by Professor J. W. White, of Philadelphia, and Dr Wood. Dr White is well known as the chief pioneer and exponent of castration for the relief of enlargement of the prostate in suitable cases. The authors have devoted eighty pages to the consideration of the prostatic affections and sixty of these are occupied by a consideration of the pathology and treatment, etc., of enlargement. The article is a most fair one; the various views regarding treatment by the different methods being discussed in an impartial manner. The conclusions are in effect: that after operation has been decided upon the two methods of chief value are (1) suprapubic prostatectomy; (2) double castration. It is unfortunate that no credit is given Ramm for the work he did in connection with the operation of castration—to have mentioned his name would have been a graceful act. Prostatectomy is a severe operative procedure while castration does not seem to be so dangerous. Statistically, both as regards mortality and after results, it would appear from the tables given that castration is much the more favourable operation to recommend. Too short a time has, however, elapsed for a definite opinion regarding the ultimate result.

In the article upon the urethral diseases no mention is made of the value of culture in the study of gonococci from a clinical standpoint. The author regards absorption of toxines as the cause of gonorrhœal rheumatism, and does not mention the

fact that the organism has been got by several observers from the fluid in the joints, and cultures made. That part which is devoted to stricture and its treatment is excellent. Internal urethrotomy is recommended, but the operations of external urethrotomy are described in detail and well. Buck's fascia is better and more universally known as Colles's fascia, and it is unfortunate that in a work of this nature local names should be resorted to.

Throughout the section of the work devoted to genito-urinary diseases there are many statements which run counter to the views of authorities in this country, and although that may be a necessary result, it would have been advisable in a work where from time to time space is taken up with trivial statements, and where not infrequently repetition occurs, that reasons had been given or evidence brought forward that the accepted views were wrong. At page 249 in regard to tubercular epididymitis, it is stated that "formerly, when it was erroneously supposed that this affection represented a primary focus of tubercular infection"; and the author proceeds to discuss the question of treatment on the basis that it is rare to have tubercle primary in the epididymis even in genito-urinary tubercle. He discountenances removal of the testis in such cases. Councilman believes, and it is at present the general view, that at least half of such cases are primary. Senn, in his work "Tubercular Disease of Genito-Urinary Tract"—mentions fifty per cent. of tubercle in testis as primary. We cannot but feel that some notice should have been taken of this divergence of opinion instead of the simple statement that the usual treatment is based on, in the author's opinion, a misconception.

About 150 pages are devoted to syphilis. Dr James S. Howe deals with the primary manifestation and the various eruptions on the skin. His matter is better than the coloured illustrations which accompany it, and which leave a good deal to be desired. All of them are printed in too few colours, and except that of the soles of the feet, give a very faint idea of the character of the lesions.

The section on the bones, joints, etc., is written by Dr Lewis C. Bosher, and is excellent though brief. The illustrations in half tone are thoroughly satisfactory.

Syphilis of the respiratory, circulatory, lymphatic, and

alimentary systems (Jo. H. Linsley) is thoroughly discussed, the affections of the larynx, the lymphatics, and the liver being especially well described.

Hammond, who treats of the nervous system, shares what is now a very widespread view, that locomotor ataxia is in a very large proportion of cases a manifestation of syphilis, and that an absence of response to treatment is no proof of the non-specific nature of any given case.

Syphilis of the eye is fully dealt with (Pooley), and is illustrated by several excellent coloured plates.

Hereditary syphilis is described by Dr Jacobs, and treatment falls to Dr Greene, who, while following the majority with regard to the use of mercury, lays a good deal of stress on the advisability of treatment by tonics, such as iron, damiana, phosphorus, etc. He refers specially to the influence of climate upon the disease, and says that if English physicians lived in New York, where catarrhal diseases are so prevalent, they would not have so exalted an opinion of the internal use of mercury. With regard to the period at which treatment should be commenced, he says it is exceedingly unwise to commence treatment until patient and physician are absolutely sure that the disease is present, and therefore he does not give it until the erythema appears. He strongly recommends the tannate of mercury in pill form, and presses for the greater use of inunction or fumigation, and he gives full details of treatment of the various lesions.

The section on diseases of the skin is particularly good.

Eczema, to which one naturally turns first, is very fully discussed, especially with regard to treatment, by Dr Hardaway. Much of the advice given is most valuable, and we observe with pleasure that some of the older, simpler prescriptions are warmly recommended. Like other authors, however, he has not succeeded in finding an ideal method of subdividing the disease, for "papular" eczema, "parasitic" eczema, and "infantile" eczema rest on three different basés—the form of the disease, the cause of it, and the age of the patient.

The paragraphs on the histology are good though brief. Psoriasis is by Dr Klotz. The photographs which illustrate it are from the collection of Dr Fordyce; they have lost much in reproduction and do not give one at all a right idea of Dr Fordyce's photographic powers.

With regard to etiology he very candidly and wisely leaves out all those various fanciful theories, such as the trophic and vasomotor, and regards climate, hygiene, social and economic conditions as of no influence. He also says that diet and the use of alcohol have no bearing on the disease. Perhaps, strictly speaking, this is true, but no one with much experience of psoriasis will deny the evil effect of alcohol on the disease when once it has developed. His views on arsenic are those generally held, namely, that it is injurious in the acute cases, and to other drugs recommended for internal use he only refers, without giving his personal experience. We quite agree with him with regard to thyroid that "the results have not been sufficiently convincing to warrant the use of this by no means harmless remedy." It would perhaps have been well to have been more full with the directions for local treatment.

The article on seborrhœic eczema by Dr Heitzmann would have been better done by one more in sympathy with Unna's views. It is throughout antagonistic, and consequently not as absolutely fair as it might have been.

The section on vegetable parasites is by Dr Corlett. The account of the fungi is excellent. Favus is evidently so rare in America that one misses certain details which are familiar to us here. It seems a pity that the old diagrams should be copied from book to book when it is so easy to obtain specimens for fresh ones. His favourite application is chrysarobin, and he evidently has a proper appreciation of the difficulties of treatment. In ringworm he gives a good account of the fungus, and seems to apportion the credit of recent discoveries fairly among the different workers.

Did space permit, many other articles might be referred to. All the articles by Dr A. R. Robinson, an Edinburgh graduate by the way, are scientific, and, if a trifle dogmatic, are perhaps all the better of it. Dr J. C. Johnstone contributes the article on tuberculosis, much of which is excellent, though his introduction of the name Paratuberculosis does not find much favour in this country. Lupus erythematosus by the same author is rather briefly dealt with. Perhaps this is explained by the very (unduly) pessimistic views regarding it which prevail in America.

It is to be regretted that the illustrations are not up to the level of the text. With one or two exceptions the coloured

ones are poor. Too few colours are used, and their appearance is consequently unnatural. The half-tone illustrations too are not up to American level, and the only ones one can conscientiously commend are the drawings of microscopic sections.

The editors are to be congratulated on the success of their attempt to produce a really good practical system.

Cerebral and Mental Symptoms in Relation to Somatic Disease, Anæsthetics and Toxic Agents, Traumata and Surgical Procedures. With a Review of the Treatment of some Cerebral and Mental Symptoms by Operation. By JAMES CHRISTIAN SIMPSON, M.B., C.M., M.D. 8vo, pp. 192. London: John Bale & Danielsson. 1898. Price 5s. net.

THE author tells us in the preface that the subject-matter of this book was presented as a thesis for the degree of M.D. of the University of Edinburgh in 1895. It was deemed "worthy of competing for the thesis gold medals," but did not gain farther appreciation from the Professors, who, in fact, are little apt to give honour to learning not within their own beats. The author announces that no alteration in the original thesis has been made, perhaps because he wishes the medical public to have an opportunity of judging whether the thesis should have gained a medal. In any case we think Dr Simpson should have brought his publication up to date. Nevertheless it is a treatise of which a young physician may well feel proud. It deals mainly with the proximate or exciting causes of cerebral diseases and insanities. In default of personal experience, the author has been diligent in searching through recent medical literature. The principal sources of his information are the *British Medical Journal*, the *Lancet*, and other periodicals. It is clear he has often made use of *resumés* without falling back upon the originals. This has probably led him now and then into errors. He quotes a medical journal to this effect: "Dahli (meaning Ludvig Dahl) reports that in Norway, of 10,000 deaths in between 1853 and 1855, 33·8 per cent. were from alcoholism, while in the period from 1881 to 1885 the percentage was reduced to 10·1, and a further reduction to 6·9 took place between 1886 and 1888." Surely this statement of one-third of the deaths during two

years being from alcoholism is a mistake or mistranslation. It is quite new to us.

Dr Simpson cites a few French works, but appears to have consulted scarcely any German authorities. The collection of facts and details shows much vigilance and industry, but the materials are sometimes too little elaborated ; observations are quoted in so curtailed a form that their significance is not clear, and so they had much better have been left out altogether. Here and there the sentences are so constructed that they fail fully to bring out the meaning designed, nor is there any use giving chapter and verse for trite statements which no one is likely to dispute. With these reservations, Dr Simpson's work contains a large number of interesting observations over a wide field, and is as a whole well put together. The author has clearly a taste for psychological investigations which promises good results, whether he engages in general practice as a physician, or takes to the speciality of insanity. The book is not without original features. During his medical and surgical studies at the Royal Infirmary Dr Simpson has carefully observed and recorded many mental manifestations of disease which were probably little noticed by the physicians and surgeons whom he followed.

The first part of the book deals with normal and abnormal stimuli, the mental symptoms connected with fever and diseases of the thoracic and abdominal viscera, and of the arterial system. In the second part Dr Simpson treats of toxic insanity, poisons which act especially upon the nervous system ; amongst these he mentions pellagrous insanity, but omits all mention of the instructive studies of Tuczek on insanity following ergotism. We are pleased to see that he condemns the abnormal use of bromide of potass, though not so fully as he might have done. The following sentence is difficult to comprehend, as the end of it seems not coherent with the beginning : " Certain mental symptoms are common to all poisons, and, according to Legrain, no intellectual disorder is more pathognomic of one than of another poison, as the artificial insanity produced is nothing but the dissolution of nervous energy which takes place more or less rapidly, and affects different parts to a different depth in the same individual, and also in other persons subjected to the same poisons." In fact, as may be gathered from Dr Simpson's own pages, there is a great variety in the type of

mental derangement produced by different drugs, and the effects of some of them are distinctive.

In the next part the author deals with traumatic insanity, and in the fourth with the surgical relief of cerebral and mental symptoms. Here Dr Simpson is somewhat behind the times, for during the three years which have elapsed since he sent in his thesis the attempts at operative treatment for microcephaly and general paralysis have so much fallen into discredit that the fourteen pages which he gives to this subject are somewhat too much. He makes no mention of Burckhardt's removal of portions of the brain in insanity, which, however, does not seem to have gained any hopeful results, and is not likely to be repeated in a hurry.

The fifth part is on post-operative insanity. On the whole this is an able and instructive work, full of advanced ideas, and we hope to hear further from the author.

The Natural History of Digestion. By A. LOCKHART GILLESPIE, M.D., F.R.C.P.Ed. *Contemporary Science Series.* Post 8vo, pp. 427, illustrated. London: Walter Scott, Ltd. 1898. Price 6s.

THE latest volume—the 24th of the *Contemporary Science Series*—treats of the natural history of digestion. A healthy man is said not to know that he has got a digestion, and, as the author tells us, civilised man habitually ill-treats his digestive organs. It would therefore be a real benefit to the human race, could the average man get some insight into the laws which he is so constantly setting at defiance, and the elaborate digestive process which he is so constantly abusing, when he dines out and gives full play to his cultivated palate and delicately-trained sense of taste and smell. We fear, however, that the average man would find the "Natural History of Digestion" a somewhat indigestible meal. The volume will not appeal to the general reader, but is a scientific book written for the physiological chemist and educated physician, to whom it should prove valuable, alike from the original matter it contains and the free quotation of the views of different workers in a wide and varied field of observation.

The opening chapter of the volume is devoted to ancient theories of digestion, and is too concise to be as interesting and readable as it might have been made. The author next passes to digestion in plants—an extremely interesting section, giving a full account of the digestive process in carnivorous plants, and well illustrated by photographs and figures, which show the part played by tentacles, marginal spines and sensitive bristles in the capture and assimilation of food. Digestion in animals is next considered, and the anatomy of the digestive tract discussed. To ferments and ferment action, that much disputed point, a chapter is devoted. The author is inclined to regard the action of unorganised ferments as comparable to that of *lubricants*, as illustrated by oil in the working of a machine. The simile is ingenious, and perhaps conveys as much information to the mind of the reader as the theories of Berzelius, Liebig or Fischer. Considerable space is devoted to the digestive processes in the animal body, and the subject is very fully discussed even down to the composition of the proteid molecule, and an excellent account of the work of different observers is given. Digestion is then traced in its gradual ascent from the lowest unicellular forms of life towards the complex process as it is found in man. A chapter which will interest the general reader is on stimulants in their relation to digestion. But alas for our friends the teetotalers, "deluded fanatics" who mislead the public with "theatrical and biassed harangues." Alcohol, though unnecessary to a healthy man, if taken with meals in moderate doses, is found often to be beneficial, as after much of the alcohol is absorbed the secretion of hydrochloric acid increases to often more than double the proportion which it would otherwise attain, and the secretion of acid continues longer than when no alcohol has been taken. The volume closes with a discussion of the food of different animals.

The author's style is crisp and decided, at times perhaps too much so. Very numerous figures are introduced into the text, necessary figures certainly, but they do not add to the ease and pleasure in reading. Throughout the text is freely illustrated with tables and graphic charts; many of these are valuable, and place the observation before the reader at a glance, but some (pp. 182, 370) are so complicated as to be of little use to anyone unaccustomed to the constant study of

such figures. The illustrations from photographs and original drawings are good for the most part, and many are with advantage introduced from other works.

The author has produced a volume which must prove of value to many workers in the field of science, not only from the original matter it contains, but also as a synopsis of an enormous amount of work on an important and interesting subject. Within recent years so much labour has been expended on the physiology of digestion, that it is a real boon to find this work collected in the compass of a single volume, and the author has added to the value of the book by giving the references to the original papers throughout the text. The standard of the Contemporary Science Series is a high one: the present volume in no way diminishes the excellence of that standard

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A Manual of Modern Surgery, General and Operative. By JOHN CHALMERS DA COSTA, M.D. 8vo, pp. 911, with 386 illustrations. London: Henry Kimpton. 1898. Price 21s. net.

THIS is the second edition of a work which the author states in the preface is intended to take a position "between the text-book and the compend." "It has been practically rewritten, many new articles added (*sic*), and a majority of the old articles enlarged, restricted, or otherwise altered." After reading more than one manual which is intended to "stand between the text-book and the compend," we have come to the conclusion that the author requires to be a genius if he is to succeed. We are certain Dr Da Costa is a better surgeon than an author.

In the chapter on bacteriology, the discussion of the various germicides with their uses, limitations, and disadvantages in the preparation of the patient, the surgeon, and the instruments is distinctly useful, but on the subject of boiling water as a germicide, how quaintly simple this—"One can use boiling water upon instruments and dressings, but rarely upon a patient, and never upon the surgeon"!

With the exception that stiffness of the jaws (spasm of the masseters) is not given its proper place as usually the first symptom to appear, but is described as following stiffness of the neck, the

account given of tetanus, acute and chronic, is good, and we are glad to see that a quotation from Yandell indicates that the true ground for prognosis is to be found in the length of the incubation period in each case, and the duration of the symptoms; and the true test of a remedy is well indicated in the question—"Does it cure cases in which the disease has see in previous to the ninth day?" How does antitoxin in tetanus answer *this* test? We can all agree with this statement, which occurs under the heading of treatment—"Far better than even to treat tetanus well is to prevent it." But what follows? "Every punctured wound is to be incised to its depth and thoroughly cleansed and drained." *Every* punctured wound? And what of this?—"Isolate the patient, as the disease is infective"! The same would apply to osteomyelitis, septicæmia, and any case of germ infection. With all our admiration for American surgery, we confess there is a want of balance and sanity in some of its exponents which sadly mars the value of their teaching.

No exception can be taken to the statement that "tubercular testicle is not rare," though that is scarcely the way we should have stated the fact; but the same cannot be said of what follows:—"It is rarely primary, being as a rule preceded by tuberculosis of the kidney, bladder, or prostate." In dealing with the treatment of tuberculosis of joints, the author describes Bier's congestive method, and, while allowing that cures have been reported, he states that he has "never seen a cure brought about by the method." He has been unfortunate; we have frequently seen complete cures, and sometimes in most obstinate, or even advanced cases.

In the chapter dealing with fractures, the symptoms and orthodox treatment are well described, and we are glad to note a warning against the attempt to elicit crepitus and "diminished arc of rotation" in a case of suspected fracture of the neck of the femur. The chapter on injuries of the brain contains a good account of the symptoms, and of the treatment which ought to be followed.

Some of the teaching in this book is undoubtedly erroneous, and even if such were excised, its usefulness to student or practitioner would be very limited.

Rheumatoid Arthritis. Its Pathology, Morbid Anatomy and Treatment. By GILBERT A. BANNATYNE, M.D., M.R.C.P. Second edition. 8vo, pp. 182, with 8 plates and illustrations. Bristol: John Wright & Co. 1898. Price 7s. 6d. net.

THE second edition of this monograph gives the author's more matured ideas as to the nature and origin of rheumatoid arthritis. The etiology and pathology of the condition are very fully discussed, and much stress is laid upon the bacterial origin of the disease. If here and there one is inclined to view the author as too much of the special pleader, the views of other observers are fully and fairly stated, and the value of the work is enhanced by a very full account of the literature of the condition. Perhaps the weakest part of the book is the chapter on bacteriology, in which the organism isolated by Dr Wohlmann and the author is described, but not so fully and well as one could have wished. The illustrations throughout the text are excellent. The monograph forms a very readable and useful volume, and one which will well repay perusal.

Masters of Medicine: Sir J. Y. Simpson. By H. LAING GORDON. Post 8vo, pp. 233. London: T. Fisher Unwin. Price 3s. 6d.

THE appearance of two biographies of the great Simpson within the space of one year bears evidence of the active interest felt in regard to his life and work. This, perhaps, is due to the public prominence given to the celebrations of the jubilee of anæsthetics, but whatever be the reason, the fact is none the less gratifying. In the present work Mr Laing Gordon has succeeded in condensing a vast amount of biographical material into a succinct, popular, and eminently readable narrative. The introduction of chloroform and the discussions to which it gave rise are treated at some length, but due proportion is observed throughout. It is a pity that the personal controversies were not a little more clearly limned, as they tend to emphasise the character of the man, while they indicate a social condition difficult to understand at the present day. It only remains to state that the book is well got up, and is embellished with a photogravure of Sir James. The letterpress also is very free from errors, the placing of the death of the Bruce in 1339 instead of 1329 being the most noteworthy slip.

Abstracts from Recent Literature

MEDICINE

ON SCLERODERMA AND CHRONIC RHEUMATOID ARTHRITIS (Dercum, *Jour. of Nerv. and Mental Disease*, October 1898).—It is now a recognised fact that the morbid process in scleroderma is not necessarily confined to the skin, but may affect deeper structures, *e.g.* bones, joints, muscles, tendons, etc. It is generally thought, however, that the changes in the skin are primary, and the changes in the deeper parts (*e.g.* the rigidity of joints and atrophy of bone seen in the fingers in sclerodactyle) are due to the contracture of the overlying skin and the consequent interference with nutrition. Dercum describes a case which "proves beyond all doubt that changes occur in the bones of the fingers, independent of contracture and atrophy of the skin." The patient presented the typical facies of scleroderma, and the hands were in a condition of sclerodactyle—the fingers being fixed and rigid, but, instead of being pointed and showing excessive contracture and atrophy of the skin, they were bulbous and sausage-shaped. The tips of the fingers and thumbs had suffered repeatedly from ulcerations, reminding one of Morvan's disease. The skiagraph showed that the distal phalanges of the fingers had undergone, not the usual general sharpening and wasting, but such gross loss of bony tissue "as to justify no other inference than that the changes were trophic in character."

Dercum then describes a remarkable case which, he thinks, must be placed under the heading of rheumatoid arthritis, but which has many features pointing strongly to scleroderma, and "suggests a similarity in the pathological changes at work." The disease began with recurrent attacks of swelling and pain in one knee. Then stiffness gradually developed till the patient was practically rigid—limbs, head and trunk almost rigidly extended, jaws and ribs almost completely fixed. There were marked trophic changes in the skin and deeper structures, *e.g.*, the skin generally was thin, smooth and shiny; the palms and soles and the deeper tissues, such as the muscles of limb, thorax and abdomen, and the fibro-cartilage of the ears, were indurated, much firmer and denser and less mobile than normal, evidently from some diffuse sclerotic change. This case, the writer thinks, "suggests a general sclerotic process bringing about extensive changes in bones, joints, muscles, tendons and skin, similar in character to those seen in scleroderma. It would almost seem as though in scleroderma the process expanded itself primarily upon other structures, while in this case, call it rheumatoid arthritis, if we may, the process had expended itself principally upon the deeper structures."

He also thinks this case suggests that two, if not more, clinical entities are included under rheumatoid arthritis : " one a disease in which a sclerotic process, similar to that which occurs in scleroderma, is active, and another in which the joint changes are attended by absorption of cartilage, eburnation of bone, osteophytic deposits, and secondary arthritic muscular atrophy."

PERICARDITIS AND ENDOCARDITIS.—Baillet (*Journal des Practicus*, Jan. 28th, 1899, p. 51), discussing pericarditis in the course of Bright's disease, advocates the view that uræmic pericarditis is in reality of an infective nature. He quotes three cases where cultivations were made from the pericardial effusion. Two of these cases can be disregarded, as the cultivations were made at the autopsy thirty-five and thirty-six hours after death, and the possibility of *post-mortem* infection by the B. Coli, the organism obtained, cannot be excluded, for, as Birch-Hirschfeld has shown (*Munchen. med. Wochenschr.*, No. 50, 1898), even without appreciable intestinal lesion the B. Coli will, during the time the subject is dying, pass from the intestinal canal to all the organs by the blood stream and lymphatics. In Hirschfeld's opinion this error surrounds any *post-mortem* bacteriological work. Baillet's third case is of interest. The patient died of nephritis with pericarditis and uræmic symptoms. Fluid was drawn off from the pericardium two hours after death under strict precautions to prevent any contamination. From it pure cultures of a streptococcus were obtained. Similar cultivations were obtained at the *post-mortem* from the pericardial fluid, and from the blood in the right ventricle. From his cases the author concludes that the pericarditis occurring in the course of nephritis must be considered as of an infective nature, and not the result of a uræmic intoxication.

Rane (*Medical Record*, New York, Jan. 14th, 1899), discussing the septic nature of endocarditis and its relation to the distribution of the blood, advances the view that the germs, which may be the cause of the condition find the best medium for their growth and development in arterial blood. Hence in adult life endocarditis is usually found affecting the left side of the heart. During fœtal life, however, the auricle obtains the freshly oxygenated blood directly from the placenta, and hence there is a preponderance of endocardial inflammation upon the right side of the heart until the mode of circulation becomes altered by the establishment of the pulmonary circulation.

MEMBRANOUS ENTERITIS.—Einhorn (*Med. Record*, New York, Jan. 28th, 1899), discussing membranous enteritis and its treatment, lays much stress on the nervous character of the

disease. He investigated the state of gastric digestion in twelve cases, and finds—(1) that the motor function of the stomach was increased in eight cases and normal in four; (2) that five cases presented typical achylia gastrica, a noteworthy fact when the comparative rarity of this condition in digestive disorders is taken into account. Even in those cases where the typical achylia was lacking, some of the features characteristic of achylia were encountered. The author considers, therefore, that in membranous enteritis achylia plays an important part. Whether one condition causes the other, or one and the same factor (nervous influences) creates both, is difficult to say.

As regards the nature of the discharges, the casts, more or less complete, consist of mucus mixed with dried-up epithelial cells. Though micro-organisms are present, they do not seem to play an important part in the disease.

In the treatment of membranous enteritis diet plays a principal part. A deficient, light, or fluid diet is unsuitable. An ample diet with plenty of vegetables is the most suitable. The intestines should be gradually trained to master the foods customary in healthy individuals.

During the attacks the intestine should be washed out with a cleansing enema of warm salt water (one teaspoonful to the quart), warm applications applied to the abdomen, sedatives given for the pain, and a light diet and rest in bed prescribed. During the intervals free from pain there should be methodical use of oil enemata, the enema being given at night and retained during the night if possible. The enema should be given every night for three weeks, and subsequently every second night, and the interval gradually increased, the treatment being continued for eight months. The author places a very high value on the use of oil enemata, which exert a favourable influence upon the constipation and diminish or check the secretion of mucus.

The frequency of enteroptosis and anomalies of digestion must be borne in mind and suitably treated. Nor should the neurotic symptoms be neglected.

ACUTE PNEUMONIA AND ITS NERVOUS ORIGIN.—Mays (*New York Medical Journal*, December 31, 1898) believes there is too great a tendency to regard pneumonia only in its local aspect as a disease of the lungs to the neglect of some important central nerve tract where its fountain-head often resides. Pneumonia may be produced experimentally by section of the pneumogastric nerves, while clinically there were records of its occurrence after injury or disease of the same nerves. Disintegration of the pulmonary nerve supply bears a causative relation to acute pneumonia. Acute pneumonia has its age periods, which are largely governed by an instability or a want of resistance on

the part of the nervous system. Other diseases arise as complications of pneumonia, because the morbid impulses of the latter radiate through and compromise neighbouring nerve tracts. The relative frequency with which the complications arise depends probably on the difference in the biological ages of the nerve centres which are involved. The pathology, physical signs and symptoms of pneumonia vary at different ages on account of the varying irritability of the nerve tracts which are implicated. This consideration of acute pneumonia from the standpoint of the development of the nervous system harmonises and unifies the varying factors of the disease; while, as regards treatment, it calls for the allaying of the nervous irritability and the strengthening of the respiratory system rather than the circulatory, which is the older biologically, and therefore able to offer greater resistance to disease. These therapeutic ends are best met by the application of ice and by the internal use of strychnine.

THE CAUSATION OF STUTTERING. — Dr Mygind, in the *Archiv. für Laryngologie*, states the conclusions he has arrived at from a consideration of two hundred cases of this affection in reference to its ætiology. He finds that males are by far the most frequently affected, 85 per cent. of his cases being of this sex. The affection was most often met with in children who were learning to speak, *i.e.* before the age of six years. In most cases observed the children were late in learning to articulate.

Heredity is a most important factor; in 42 per cent. of the cases the immediate relatives had been or were stutterers. Mental affections were also noted as frequently occurring amongst the relatives. Adenoid vegetations of the nasopharynx were present in 39 per cent. of Mygind's cases, and other pathological conditions of this locality were frequently noted. Imitation was often the cause of the affection, as well as fright or nervousness in some cases. Mygind says that the occurrence of nervous degeneracy is to be specially noted amongst the stutterers themselves or amongst their relations.

SURGERY

PRESSURE SYMPTOMS AFTER HEAD INJURIES.—Dr Walton has an interesting paper on those perplexing cases of injury to the head where operative procedure is indicated, because of localised paralysis, along with symptoms of irritation and depression. Trephining is often fruitless, nothing else being found than a tensely bulging dura, from which on incision there escapes with a gush a quantity of clear serum. His conclusions regarding this subarachnoid serous exudation are as follows:—

1. A severe blow may result either directly or by contre coup in a localised bruising, congestion and swelling of the brain tissue with serous exudation into the subarachnoid space, either with or without œdema of the brain itself.

2. If this accumulation of fluid occur over the motor area, it may be imprisoned and cause focal pressure symptoms, simulating meningeal hæmorrhage.

3. This accumulation of fluid represents an ineffectual effort towards relief of tension.

4. The lesion is limited; the paralysis disappearing in the course of a few days.

5. The condition may be mistaken for middle meningeal or middle cerebral hæmorrhage. The diagnosis is often difficult, but may be helped by noting—(*a*) an atypical course; (*b*) absence of increasing coma; (*c*) appearance of sensitiveness to pain on manipulation of the head, even after the unconsciousness is so great that questions are not answered.

6. The mere presence of paralysis following a blow upon the head is not necessarily an indication for immediate operation, and in the absence of steadily deepening unconsciousness and of the steady progression of other cerebral symptoms it will often be wise to postpone surgical interference.

7. This lesion is to be particularly remembered in the case of children and young adults, and perhaps in alcoholic patients. In elderly patients the same set of symptoms points more decidedly towards hæmorrhage. (*American Journal of the Medical Sciences*, Sept. 1898.)

DRAINAGE IN SUPPURATIVE APPENDICITIS.—Dr Angus M'Lean has an interesting paper on this subject in the *Medical Age* for October 1898. He states that there are two well-recognised methods of drainage in use at the present time—tubular and capillary. For tubular drainage either the soft rubber or the glass tube is used. Rubber tubing is more irritating than glass, but either may produce intestinal or vesical fistulæ from continued use. To obviate these, it has been recommended to cover the tubing with a few layers of gauze. For capillary drainage sterilised or iodoform gauze or sterilised wicking is used. The most convenient strips are those from 16 to 20 inches long and 6 wide, each folded twice upon itself. Plain gauze absorbs fluids more rapidly than iodoform gauze. To get the best effects the free ends ought to be lower than the internal portion and so syphon action is added to the capillary attraction. A strip such as is described will empty a pint of water from a basin in twelve hours.

If the abdominal cavity is to be drained, strips of gauze are passed in different directions, brought out at the opening and

fastened together. The external portion should be of such length that when brought down over the side of the abdomen the free end is lower than the internal portions. The author objects to the use of iodoform gauze as a drain, as absorptive poisoning may result. He prefers merely sterilised gauze when extensive drainage is necessary. A safe drain is made by rolling upon itself a piece of absorbent gauze until it is about the size of the finger, and around this rolling a piece of Lister's protective silk, leaving half an inch of the gauze free at each end. The protective silk prevents adhesions, and troublesome adhesions frequently form between the gauze and the tissues when left in for some time.

The two methods are frequently combined by placing a strip of gauze inside the glass tube and so supplying the cavity by capillary attraction.

The author's conclusions are as follows :—

When pus is present, tubing should be used because gauze itself will not free a cavity of pus.

When inflammatory exudation is present gauze proves the most satisfactory.

When gauze drainage of the peritoneal cavity is employed, the free end must be lower than the internal end.

Mixed drainage is recommended where septic peritonitis accompanies suppurative appendicitis.

Drainage should be dispensed with as soon as possible and the external wound allowed to heal, for the more rapid the union the less chance there is of a hernia resulting.

THE TREATMENT OF SPRAINS OF THE ANKLE BY GIBNEY'S BANDAGE.—Dr Adams draws attention to the value of this procedure in the October number of the *Medical Age*. This method of treating sprains was not originated by Dr Gibney, but was first advocated by Mr Edward Cottrell of this country. The plan is simplicity itself, and consists in applying a tight bandage of adhesive plaster to the ankle and lower portion of the leg immediately on the reception of the injury. No attention is paid to the use of rest or elevation—not at least after the first day. The good results obtained by this simple treatment are out of all proportion to the attention paid to the sprain. As a rule the patient is able to walk with comparative comfort immediately after the application of the bandage, and in a few days is practically well.

The bandage is applied in the following manner :—Ordinary adhesive plaster is cut into strips ½ inch wide and 18 inches long. One of the longer strips is placed around the ankle parallel to the sole of the foot, beginning in front of the big toe, carrying the strip round the ankle just above the contour of the

sole, and bringing the end back across the top of the foot to about the point where the strip began. A second parallel piece may be placed overlapping the former. These strips ought to be drawn as tightly as possible. Another strip is to be placed at right angles to those first applied, which makes it run parallel to the back of the leg. In applying this begin well behind and above the ankle and carry it down around the sole of the foot, and bring it up on the other side of the leg in stirrup fashion. After this the strips should be applied alternately until the entire foot is enclosed in a boot of adhesive plaster. The dressing, when properly applied, is very neat in appearance; a piece of ordinary roller bandage may now be applied, and the patient cautioned to be careful for a day or two, when he can move about freely. The dressing should be kept on until pain and swelling have subsided, and no other treatment is necessary. The surprise of patients so treated at their immediate ability to use the limb is emphasised by the author.

OBSTETRICS AND GYNECOLOGY

POST-PARTUM HÆMORRHAGE (NEW TREATMENT FOR ARREST OF).—Dr Bastian (*Revue Médicale de la Suisse Romande*, January, 1899) describes a new method of treating this affection. It is efficient in promoting hæmostasis no matter from what pathological condition it may result. A bivalve speculum is introduced as high up into the vagina as possible (Dr Bastian prefers that of "Cusco"), when it is opened as widely as can be done. The cervix uteri then appears in the opening. Iodoform or merely sterilised gauze is taken and pushed energetically into the cavity, taking care to block up entirely the os uteri and fornices. During this, the uterus rises into the abdominal cavity, but the plugging is continued gradually until the vagina is filled up as far as the ostium. The quantity of gauze or pledgets required is sometimes very considerable. If a slight sanguineous discharge should continue, it is easily stopped by a further introduction of the gauze. The speculum is not withdrawn until the lapse of twelve hours, when some of the plugging may be removed. The rest of the gauze is to be removed twenty-four hours after its introduction. The subsequent course is normal. The mechanism of the proceeding is as follows:—If the hæmorrhage be from the vagina, the compression effected by the blades of the speculum prevents the escape of blood as well as the distension of the vaginal walls which occludes the vessels in it. If the blood come from the lacerated cervix, the direct compression of the bleeding points and of the trunk of the uterine artery itself at the base of the ligaments together with the stretching of these by the elevation of the uterus are all causes which arrest the blood flow.

If it be due to uterine inertia, the elevation of the uterus which causes a stretching of the broad ligaments, occludes the vessels which they contain. The presence of the foreign body in the shape of the plugs also keeps up a certain degree of uterine contraction. In Dr Bastian's practice this method has proved most efficacious.

TOTAL VAGINAL EXTIRPATION OF A RUPTURED UTERUS DURING LABOUR. — Iwanow (*Centralblatt für Gynäk*, No. 2, 1899) refers to successful cases already recorded by Dührssen, Fritsch, and other operators. Fritsch points out that on account of the softness of the parts the operation is easy, and prefers it in such cases to laparotomy. Iwanow's patient was twenty-three—iii. para-labours natural. As the result of attempts made by a midwife to empty the uterus, the patient became collapsed, the consequence of a rupture involving the right side of the cervix and greater part of the lower uterine segment. The vagina was plugged and the patient removed to hospital, where it was found that the child's body lay free in the abdomen and a hydrocephalic head in the uterus. The latter was perforated and the child extracted. The uterus was then extirpated, the operation lasting thirty minutes. For the first fortnight after the operation, a fresh iodoform gauze drain was introduced daily. Patient left the hospital well one month later.

Iwanow agrees with Fritsch in recommending the vaginal operation, emphasising the better drainage thus obtained as compared with the abdominal method. He further suggests that on account of the rarity of infection following vaginal extirpation of cancerous uteri, the pelvic peritoneum, especially in multiparæ, may not be so susceptible to infection. Further, the operation may be performed in private practice, where cases of ruptured uterus are most frequently met with.

THE TREATMENT OF TUBAL PREGNANCY BY VAGINAL CŒLIOTOMY. — Becker (*Centralblatt für Gynäk*, No. 2, 1899) reports two cases. The first corresponded to the sixth week, and the tube was removed through the anterior fornix, after the division of adhesions by the thermo-cautery. This was followed by vaginal fixation of the retroverted uterus. The tube measured $5\frac{1}{2}$ cm., and contained a mole, but no trace of embryo was found.

The history of the second case resembled the former, the left tube being similarly enlarged from the presence of a mole, and the operation was carried out in the same way. Both cases recovered. Becker remarks on the simplicity of the operation, and compares it with abdominal cœliotomy.

Given the following conditions, he prefers the vaginal route:—

1. Absolute certain diagnosis, *e.g.* exclusion of a ruptured gastric ulcer.

2. Pregnancy not advanced more than two months.
3. Normal pelvis and soft parts.
4. Normal elasticity of the pelvic ligaments.
5. Proper technique.

INTRAPERITONEAL FIXATION OF THE UTERUS FROM THE VAGINA FOR RETROFLEXION. — Gottschalk (*Centralblatt für Gynäk*, No. 4, 1899) recommends this operation in all cases where ordinary means fail to relieve symptoms. He makes an incision in front of the cervix, pushing forward the bladder, and divides the peritoneum as high up as possible into two folds—a large anterior vesical, and a small posterior uterine, fold. Both are held apart by forceps, thus exposing the fundus, which does not require to be brought forwards through the opening unless to examine its posterior surface.

For deep adhesions behind the uterus Gottschalk recommends colpo-cœliotomy posterior.

The vesical fold is pulled downwards in the form of an apron against the anterior uterine wall, to which it is fixed, care being taken to avoid the bladder wall. The lower part of the vesical fold and the uterine fold are stitched together, so as to close the peritoneum.

Fourteen cases are given in detail. Gottschalk compares this operation with Dührssen's vaginal fixation. He believes it has the advantage over the latter in not causing forced anti-flexion, and the mobility of the uterus is not interfered with so much.

THE DIAGNOSIS AND TREATMENT OF THE MORE COMMON BLADDER AFFECTIONS IN WOMEN BY MEANS OF KELLY'S METHOD (Vineberg, *New York Med. Jour.*, 1899, lxix. p. 9).— Vineberg, after pointing out that Kelly's method has not secured the recognition which its simplicity and usefulness warrant, says that he has used it fully five hundred different times in over a hundred women during the last three years. The method depends on the fact that in the genupectoral position the bladder as well as the vagina may be expanded with air and so inspected and treated directly through the hollow tube of the speculum. He gives several cases in illustration, and discusses several common complaints. In a patient whom he had not seen before, he was able to secure specimens of the urine of each ureter in half an hour. In irritable bladder there are usually reddened patches in the trigone, and these and the irritability usually yield to two or three paintings with silver nitrate solution (5-10 per cent.). Cystitis is usually a condition of patches and yields to similar treatment, while the diagnosis and treatment of tuberculous disease of the bladder is equally simplified, and the diagnosis

of kidney conditions is also easier. The No. 10 cystoscope was the most commonly used, and never produced incontinence.

PREVENTION AND CURE OF CRACKS IN THE NIPPLE.—This painful affection can be prevented, according to Mabbott (*New York Medical Journal*, September 10th, 1898), by the use of lanolin. The patient should begin its use from four to six weeks before her confinement. A small amount of lanolin is to be thoroughly rubbed into each nipple every night, taking care to introduce it well into every depression or crevice, especially in the case of depressed nipples. The kneading process has also the effect of moulding the nipple, partly by pulling it out and partly by causing erection. The author thinks that lanolin is superior to other agents, because of its adhesive and penetrating qualities as well as its nutritive action on the skin. The removal of this substance from the areola requires time and care, and the manipulations thus rendered necessary may also assist in developing the nipple.

Maygrier and Blondel report that they have most successfully treated forty cases of cracked nipple with orthoform. They recommend for application a strong alcoholic solution of orthoform dropped into the cracks. This causes no great initial smarting, and as it penetrates far into the fissures, no infection of the breast followed. Complete anæsthesia of the nipple rapidly follows this application of orthoform, and lasts for some time. The infant being put to the breast a quarter of an hour later, sucks eagerly, as the drug has neither taste nor smell.

DERMATOLOGY

CASE OF URTICARIA PRODUCED BY EYE-STRAIN.—In the *Philadelphia Medical Journal* of January 14th, Oliver gives a complete and interesting account of the case of a woman, who for thirty-five years had suffered from attacks of persistent and intractable urticaria, in whom the eruption entirely disappeared after she was provided, at the age of forty-seven, with spectacles for astigmatism.

If, however, she left off her glasses, even for half an hour, the eruption would appear on her body. She also noticed that whereas she formerly had always felt cold, since wearing the glasses she was as warm and comfortable as other members of her family in the same circumstances. After wearing the glasses for about four years she again began to be troubled with the "hives," which gradually became worse. It was found that stronger glasses were needed. Her eyes were again carefully examined, and new glasses ordered. A mistake of 20°, however, was made in the cylinder axis of the right lens, with

the result that in the course of a day she became covered with the eruption. She then put on her old glasses, with the result that the hives almost disappeared in a few days' time. The new glasses were corrected, with entirely satisfactory results.

The patient was tested in many ways. Indigestible foods and a number of drugs were used with no effect. Once the lenses were secretly reversed, the change producing at once a violent attack of nettle-rash, so that it appears evident that the cutaneous irritability was in absolute relationship with the ocular deficiency.

THE TREATMENT OF LUPUS BY RÖNTGEN RAYS.—Two cases successfully treated by the Röntgen rays are narrated by Drs Albers and Schonberg in No. 27 of the *Deutsche medicinische Wochenschrift* (1898). In the first case the disease began in 1895 and had been treated in many different ways but without material benefit. During a period of nearly eight months both patients were subjected to daily application of the X rays. Each seance lasted about thirty minutes, the tube being placed 10 inches above the patient's face, and the strength of current never exceeding 20 volts 5 ampères. When any signs of dermatitis appeared the treatment was intermitted. The result was excellent. The nodules gradually underwent a diminution in size until at last they disappeared. In one case where the disease had affected the inner side of the nose—this remained not quite healed, while that on the external surface was perfectly whole.

Kümmell (*Archiv. für Klin. Chirurgie*, Bd. 57, Hf. iii.) is quite as enthusiastic. He has treated ten cases by the above method, and finds that recovery is much more certain and rapid in proportion as care is taken not to burn the skin by the rays, as this accident always means a cessation of the treatment. This author thinks that the beneficial results are not due to any dermatitis (which he has been careful to avoid) or to any specific action. That the rays have some direct action on the lupus growth there can be no doubt; it may be an electro-chemical or trophoneurotic action. The cicatrisation which follows the healing process is far less marked than that which results from any other form of treatment, and so far as the author has observed there has been no contractions in the scar tissue.

Notices

SIXTH INTERNATIONAL OTOLOGICAL CONGRESS, 1899.—This Congress is to be held in London from August 8th to 12th, under the presidency of Dr Urban Pritchard.

The British Organisation Committee, which numbers over seventy members from Great Britain and the Colonies, has Mr

A. E. Cumberbatch for its treasurer, and Mr Cresswell Baber for secretary general. It has also appointed the following sub-committees, viz. :—1. *Reception.*—Vice-chairman, Mr Field; hon. sec., Mr R. Lake. 2. *Excursion.*—Vice-chairman, Dr Dundas Grant; hon. sec., Mr P. Macleod Yearsley. 3. *Dinner.*—Vice-chairman, Mr Mark Hovell; hon. sec., Mr L. A. Lawrence. 4. *Museum.*—Vice-chairman, Mr C. A. Ballance; hon. sec., Mr Arthur A. Cheatle. The president elect is chairman of all the sub-committees.

The meeting will be held at the Examination Hall of the Royal College of Physicians of London and Royal College of Surgeons of England, and the following details have been arranged :—On Monday evening, August 7th, a preliminary reception will be held by the president-elect; on August 8th, 9th, 10th, and 11th the Congress will be in session, and will be followed on Saturday, August 12th, by an excursion for members and their lady friends.

The official languages of the Congress are English, French, German, and Italian.

The subscription, to include a copy of the transactions, is fixed at £1, to be paid to the treasurer, Mr A. E. Cumberbatch, 80 Portland Place, London, W., before the opening of the Congress.

The subject chosen for special discussion is "Indications for Opening the Mastoid in Chronic Suppurative Otitis Media," which will be introduced by Professor W. MacEwen, of Glasgow; Dr H. Knapp, of New York; Dr Luc, of Paris; and Professor Politzer, of Vienna.

A museum of specimens and instruments relating to otology, shown by members, will be held during the meeting. Communications regarding the museum should be addressed to Mr A. H. Cheatle, 117 Harley Street, London, W.

Intending members of the Congress are requested to send in their names to the Hon. Secretary General as soon as possible, and in any case *not later than May 1st.* Titles of communications, together with a short abstract of the same, to be sent to the Hon. Secretary General by the same date. According to the regulations of the Congress, no papers shall exceed fifteen minutes in reading; therefore, all long communications should be read in abstract.

EDITORIAL NOTICES.

All communications regarding Original Articles, Medical News, Reports of Societies, and Exchanges should be addressed to the EDITOR, *3 Walker Street, Edinburgh.*

Books for Review, and all Communications regarding Subscriptions, Advertisements, Terms for Advertising and Reprints should be sent to the PUBLISHER, 18 *Teviot Place, Edinburgh.*

THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

NOTES ON THE TREATMENT OF DISEASES OF THE NERVOUS SYSTEM

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Lecture I.—On Prophylactic Measures

THERE is no system in the body the diseases of which present more discordant results as regards treatment than do those of the nervous system. Some respond readily to the means you employ, and complete recovery results. Others run a slow or a rapid course apparently quite uninfluenced as to ultimate result by any sort of treatment you may choose to adopt. Even in the most hopeless cases, however, it is usually in our power to afford more or less relief, while in the more favourable the application of remedial measures is sometimes brilliantly successful.

Believing that the treatment of disease of the nervous system is too often conducted on mere routine principles, that measures are taken without much consideration of the definite objects they are meant to serve or the ends they are capable of attaining, I wish in these lectures to put before you some kind of general survey, however imperfect in detail, of the methods at your command for the management and treatment of such cases, and of the indications which call for the employment of these methods.

We should not approach such a subject with too sanguine views, for, except in the case of a few diseases, the results of

treatment are attained slowly and only after much painstaking endeavour. Nor, on the other hand, should too pessimistic an attitude be assumed, for this may send an unfortunate patient to the nearest quack. It is only by endeavouring to grasp the principles which underlie nerve treatment, so far as they are known, and the indications for and limits of usefulness of those remedies the action of which we only know empirically, that we can wisely treat such diseases of the nervous system as may fall under our care. The quack is ever with us, though he is by no means poor, and if we do not master the methods of employing such a remedy as electricity, for example, patients, much to their subsequent sorrow, tend to drift towards unqualified electricians, rubbers, and the like, who profess to make such methods a speciality, and who surround them with a seductive mystery. No one of the methods about to be described is beyond the use of the intelligent practitioner, nor is there one of them which he ought not to be able to employ from time to time as need arises.

PROPHYLAXIS.

It is proposed to consider the subject under the following heads :—

The question of prophylaxis—importance of detail in carrying it out.

The causes of nervous disease—exciting causes—enumeration of these—relation of diseases of the reproductive organs to prophylaxis—care needed in dealing with these diseases.

Predisposing causes—heredity—indications of nervous heredity—appearance of child—marks of degeneracy—changes in the behaviour and temper of the child—other signs of neurotic inheritance.

The good effect which may be produced by careful environment and sagacious education.

The prophylactic measures which should be taken—to whom should the management of the child be entrusted?—the kind of life the child should lead—his pursuits—his food.

The behaviour of those in charge of the child—lines on which the management of the child should be conducted—necessity of fairness and openness.

The importance of encouraging the exercise of his own judgment—the restraining of passion—the suppression of all sentimentality—and all that pertains to imagination and mysticism.

The importance of exercising care as to the books read by the child—companionships he may form—sexual aberrations.

School life—its importance—reasons why it is good for a neurotic child—dangers of school life.

Mental work—importance of not pressing this unduly—mental exhaustion—its signs.

Prophylaxis in adults who come of neurotic stock—general rules regarding this—exercise—the more suitable varieties—the question of alcohol—and of narcotics.

Before we proceed to consider the lines of treatment which may be adopted in cases of such diseases, there arises the question of prophylaxis, of the ways in which nervous disease may be warded off, a subject not as a rule very fully discussed in medical works.

Prophylaxis, so far as it is successful, owes that success to attention to a vast number of details, of points in management, which may appear indeed trivial individually but the sum of which is of a high importance. As it is of consequence that you should consider and understand these points, I shall speak of them in some detail, and this the more seeing that great success may attend well directed efforts towards preventing the establishment of nervous disorders.

All diseases of the nervous system depend for their establishment in the body upon some exciting cause, the result of environment, and almost all owe their origin also to a predisposing cause—heredity.

Considering first and very briefly the exciting causes, it is clear that many are beyond our control. We cannot, for example, prevent the occurrence of traumatism, nor can we arrange so that undue exposure to cold and wet shall certainly never take place. The movements of a floating kidney can, however, be controlled, and I have frequently seen the associated neurasthenia considerably improved thereby.

Fevers, including syphilis and tubercle, the toxines of which are so apt to attack the nervous tissues, have a prophylaxis of their own which we need not consider here, nor shall we deal with the methods of guarding against the occurrence of cerebral hæmorrhage and thrombosis, methods which are fully discussed in works on general medicine. It is the part of the surgeon to see that a cerebral abscess does not follow an otitis, that infection of the mastoid does not occur, and that wounds of the scalp are kept aseptic. It is not necessary here to refer to the

means to be used to prevent poisoning by lead in those exposed to the action of the salts of that metal, nor to the necessity of careful moderation and regulation in the use of alcohol, if indeed it be used at all. Excesses *in venere* as well as *in vino* are important, fortunately also avoidable, causes of nerve lesion, and intellectual work when it is combined with worry and anxiety breaks down many men.

Sometimes, on the other hand, the exciting cause may be found in some peripheral irritation. Adenoids or other nasal or tonsillar condition, if present, should be got rid of, as should also any decayed teeth which are giving rise to irritation. Parasitic worms in the intestinal tract are credited with the production of infantile convulsions in some cases, and I know of at least one instance in which mania followed the invasion of the œsophagus by a round worm.

Peripheral irritation produced by disease of the reproductive organs is a fruitful source of nervous disorder, but very great care should be exercised in dealing with such conditions. Particularly should you be cautious of allowing a neurotic woman, especially if young and unmarried, to pass under any prolonged gynecological treatment. So far as my experience goes, such treatment in these cases is more often productive of harm than good. I should like you to lay down this general rule for yourselves, namely, that unless there be some very definite uterine lesion which can unquestionably be removed within a short time, no gynecological treatment should be adopted in neurotic women. There are, of course, exceptions to this rule, and each case should be judged on its own merits, but without any doubt, prolonged treatment which is always anew directing the patient's attention to these organs and which involves repeated vaginal examination often does harm in neurotic women. And much the same rule applies in the case of neurotic men. Any local urethral treatment (save for gonorrhœa or other definite local malady) should only be allowed, if allowed at all, after grave consideration.

A full consideration of prophylaxis should include within its scope all of these and many other similar causes. Such as are more closely connected with the nervous system will be again referred to. The remainder are rather to be looked at from the point of view of general medicine, and these need not detain us here.

Of even more importance than these exciting causes is the predisposition to nervous affection, those causes which, acting by heredity, render the tissues of the nervous system more easily injured by any unfavourable condition of environment which may occur.

It is well known to you that many nervous diseases are traceable in their origin to the influence of heredity. I do not now refer to that singular group of family diseases of which Friedreich's Ataxia may be taken as a type. They are directly developmental in origin, and it is doubtful whether any post-natal prophylaxis would influence them. I refer rather to those inherited nervous disorders which appear from time to time in neurotic families, such as epilepsy, asthma, hysteria, neurasthenia, insanity, neuralgia, megrim, exophthalmic goitre, alcoholism, morphinism.

The neurotic tendency, the nervous diathesis, on which such diseases take root, is very widely spread, and in families so affected individual members here and there fall victims to its miseries, but fortunately not all. For not only must there be an inherited tendency, but there must also be an exciting cause before these maladies can arise.

Now much can be done, in persons hereditarily liable to nerve disease, by way of warding off the incidence of such maladies, by strengthening the body, toning up the nervous system and training the mind to preserve an equable balance. To reach its best results this form of prophylaxis must be commenced in the young. We may therefore now consider what are the indications in a child which suggest this nervous inheritance which point towards the probability of future nerve disease, and which should, therefore, excite our apprehension.

And of these come, in the first place, the deductions we may draw from observation of the parents. If one parent is distinctly neurotic the child will probably be so also, and this probability is changed almost to certainty if both parents show indications of the nervous diathesis.

Most valuable deductions may be drawn from the general appearance of the child. The neurotic child is usually rather stunted in growth, but is wiry and muscularly strong, so far at least as any sudden effort is concerned. His features are small, fine and delicate, his expression alert, his manner restless, his

disposition impulsive and wayward, while at the same time he is usually very clever at lessons. Of such is the "infant prodigy," the joy and pride of a doting and neurotic mother.

Then you will sometimes find more distinct signs of degeneracy to guide you, indicating at once the history of the past and the dangers of the future. You may notice, for example, that there is a retarded development of body or of mind, that there is marked asymmetry of the head or face, or that the ear is abnormal in shape or in size. You may detect the presence of hare-lip, or of cleft-palate, or of that high arching of the palate with which the researches of Dr Clouston have made us familiar. The conditions of spina bifida, and of club-foot are also very suggestive.

There are, in addition, sundry other points in the behaviour and condition of the child which are fitted to cause us anxiety. The lack of self-control, a passionate temper, the want of the joyous mirth proper to childhood, and of the admirable and kitten-like foolishness of that age, the presence of a seriousness and thoughtfulness unnatural in a child, or of a curious mental lethargy, all point to a neurotic inheritance. The like may be said of that solitariness which one sometimes sees in such children, leading them to dislike companions and even their near relatives, of the strange sexual perversions which may occur, of that melancholy by which they are sometimes seized and which not uncommonly brings thoughts of suicide, thoughts sometimes even translated into action. Often untruthful, suspicious and quarrelsome, untidy and even dirty in their habits, such children sometimes exhibit curious phases of a sentimental, unreal, and emotional religion. I recollect the case of a boy of thirteen or fourteen, brought under my notice some years ago, who arranged with himself that when he heard the name of God, even in ordinary conversation, he would lay himself prostrate on the ground. He did this whether he were in the house or out of doors. If I remember rightly he used that great Name himself, on occasion, if he thought that his friends abstained from giving him sufficient opportunity for the display of this form of religion. We decided that the best way to treat the condition was to pay no manner of attention to his peculiarities, and in a short while this curious religious phase passed away.

You will also attach importance to the occurrence of megrim, night terrors, somnambulism, convulsions in teething,

stammering and backwardness in learning to speak. Even bad spelling is, I take it, a sign of neurotic inheritance. It need hardly be added that the occurrence of any distinct nervous disease in a child is very significant.

A child exhibiting marks of neurotic inheritance may, if his education and management be judiciously conducted, develop into an adult strong in body and in mind. Indeed, we owe to neurotics much that is highest in science and in art, the strongest and most polished literature, that touch of genius which stirs the world. A useful life and even a distinguished one may therefore be his lot. But on the other hand he may sink, and his years may be passed in a miserable melancholia or other form of insanity. If, therefore, a physician be consulted as to the upbringing of such a child, he ought to remember how great a power for good or for ill is exerted by careful environment and by sagacious education. To be successful in this, great attention to detail is required, and no point should be regarded as trivial which has any bearing on the matter in hand.

In the first place, if the mother be a neurotic and hysterical woman, it is advisable that the child should not be much with her; and this because, firstly, her irritable temper and her unbalanced mind render her unsuitable to exercise due management and control, and secondly, because any nervous manifestations in the mother are apt to be copied and adopted by the imitative child. If the mother is at all sensible she will herself recognise the wisdom of this. But it is often difficult to arrange for such separation (even if it be only for some hours a day), because such a mother possesses an almost exaggerated affection for the neurotic child who so clings to her. A sensible, calm and judicious governess or children's nurse should, if possible, be entrusted with the management of the child.

As to the kind of life which such a child should lead. It should be one of regular orderliness, a life of air and of sunshine (both literally and metaphorically), of breezy commonsense in which cold bathing plays its part in toning up the nervous system, and in which muscular exercise is strongly insisted on. By all means advise gymnastics if you like, but

games which interest are I think better, and a good tumbling romp is the natural and healthy outlet for the high spirits of a child. As he gets older he should be encouraged to swim, particularly in the sea, to ride, to cycle, to golf, to play hockey, tennis, etc. Children's parties are not for him, nor theatres, nor concerts, but he should be encouraged to form friendships with other children and to meet them in games.

It is highly important, as regards the child's mind, that everything which is subjective should be discouraged and suppressed, and everything which is objective encouraged. His interest in plants, in natural history, particularly in looking after animal pets, in machinery, in gardening, and the like, should be stimulated.

His food ought to be simple, and the cooking good but plain. The object being to build up the body—bone, muscle and fat—and not to stimulate the cortex, you will see that the child is fed chiefly on milk, eggs, cream, porridge, and other farinaceous food, poultry, fish, rabbit, and that butcher meat is only given occasionally. Such is the Gospel of Fat which my friend Dr Clouston so successfully preaches.[1] It need hardly be added that alcohol in any form should not be given to young neurotics; indeed, its use even in adults of this temperament is dangerous.

The behaviour of those in charge of such a child is a very important matter. They should be calm, judicious, firm, and yet kindly. There must be no show of temper or irritability, even when the behaviour of the child is most trying. The management is not to be in any way hard or rigorous, nor one depending on threats, but it is exceedingly important that implicit and unquestioning obedience should be exacted on all occasions. So far as possible, when a rule displeasing to the child has to be laid down, the reason for the measure should be explained to him. Above all things, never tell a child anything which is untrue, even with a view to his own good.

A neurotic child is very apt to imagine unfairness, to brood, it may be for years, in silence over a supposed injustice. He is very sensitive in his feelings, easily inflated

[1] You may bear in mind that all healthy children, and young women up to the age of twenty, are, or ought to be, plump.

by injudicious praise, readily over-depressed by indiscreet blame.

The mistake which parents most commonly make in regard to neurotic children is to spoil them by indulging every wish, but the opposite of this is quite as harmful. A neurotic child surrounded by a net-work of iron rules will emerge with its spirit crushed and broken. Rather should he be allowed to carry out his own wishes (provided these are not distinctly harmful), even if he suffer discomfort by so doing. Let him learn by the hard but wholesome way of experience. Better far that he should so suffer than that he should be brought up to be like a marionette, moving in unison with every wire the parent touches. It is important to train the child to act on his own judgment and to think for himself, so that when he becomes a man he may not suffer from that weakness and fickleness of purpose so often the lot of the neurotic.

An equal balance of mind is not easily attained, but this should be the great object in view in the rearing of such children. It should be constantly inculcated how necessary it is to restrain the passions of anger, jealousy and the like, to combat the temptations of the palate, and, if necessary, other less innocent appetites, to face pain bravely and in silence.

All signs of sentimentality in such a child should be suppressed by those in charge, and they should attach, or rather appear to attach, as little importance as possible to any complaints he may make of illness. Little should be made of such complaints, and it is almost superfluous to say that the details of the illnesses of other persons should not be discussed in the hearing of a neurotic child.[1] And as the whole strength of the teacher should be directed to develop the lower rather than the higher centres, therefore that which pertains to the imaginative functions should be discouraged. A dreamy idealism, an artistic bent, exciting and sensuous music, everything which stimulates the imagination and partakes of mysticism ought to be avoided. A perfervid, sentimental and hysterical religion does much harm. A more true and useful Art, if such be latent in the child, may safely be encouraged later, when body and brain are more fully developed.

[1] In the case of girls at first menstruation, care should be taken to explain quietly that the process is a natural one.

Too great care cannot be exercised in regard to the books which a neurotic youth reads, in order to see that their tone is healthy and manly. Lifelong damage may be done by a single perusal of an objectionable or impure book. Careful guard has to be kept against sexual aberrations. This implies some oversight as to the companionships he may form, and so brings us to the question of schools.

The advantages which school life offers are found both in day schools and in boarding schools, though some are more prominent in the latter. They consist in the sense of an organised discipline such as is impossible at home, in the feeling that no exceptions can be made without serious cause, but that every child must conform to rule. This is an important matter for neurotic children, and not less so is the tendency of school life to rub off the angles and to tone down the nervous peculiarities of such children, to encourage a spirit of manliness and *esprit de corps*. I have repeatedly seen boarding school life prove most effective in these ways in the case of neurotic children. On the other hand boarding schools have their peculiar dangers, and much depends on the wisdom, common-sense and acuteness of the master in charge of the house in which the boys sleep.

For all but the most profoundly neurotic children school is advisable. Whether he should be sent to a boarding school in preference to a day school depends in part on whether the boy can stand the rough and tumble life there, and in part on whether he is under wise control at home. But, whatever school be selected, it should be borne in mind that a wise superintendence and the presence of a manly and healthy moral tone in the school are of far greater importance for the future of the boy than mere teaching power.

As to school work, you will find that neurotic boys usually take a high place. They do this either because they learn so easily that mental work is light to them, or because they are over conscientious in their labours. In the former case no great evil may be done, but in the latter the mental life and vigour of the future may be seriously endangered. For such a boy the stimulus of competition is bad, and he may leave school at once covered with honours and exhausted in brain, with a cerebral cortex so enfeebled that no good solid work

can be done by him in after life. Every one must have noticed instances of this kind, not only in school but also in University life. But if a boy is good at games as well as at lessons, you need not fear for him though he come out top of his class, or figure as Ettles' Prizeman or Senior Wrangler.

There is a curious difference between childhood and adult life as regards the effect of mental work and of worry on the brain. In the adult it is difficult to injure the brain by overwork, because, when a certain intensity of strain has been reached, the brain refuses to work any longer and the man is forced to rest. On the other hand it is quite easy to do serious injury to the brain of a child by pressing him in regard to mental work, and this happens even more readily in neurasthenics than in healthy children. The reverse is the case with regard to worry. This falls lightly on a healthy child, and the most serious trouble may at any time be dissipated by the administration of a sugar-plum. In a man, on the other hand, cares and worries are not readily shaken off. The mind cannot easily forget them, and sleep is interfered with. A neurotic child takes an intermediate position in this matter. Worries and anxieties are apt to fix themselves in his mind in a quite morbid fashion.

In conclusion a word may be said as to mental work and mental exhaustion in neurotic children. Even in the perfectly healthy child we know from many observations that an hour or two of such work produces an exhaustion which is quite perceptible in that it blunts the tactile sense to a degree capable of being measured. In neurotics exhaustion of the cortex is even more readily produced, the visual field, for example, becoming distinctly smaller. This points to the necessity of making the periods of work of a neurotic youth short, and of interposing muscular exercise between each. It might be possible in any individual case, by direct testing of the visual or tactile sense, to say whether too much exhaustion was being occasioned, or, in other words, whether the mental work done was proving too much for the boy.

In regard to an adult who comes of a neurotic stock the same general line of life should be adopted. It should be

carefully explained to him or to her, as the case may be, that whatever makes for bodily hardness and strength is that which is to be aimed at. Any considerable mental strain should be avoided, brain work being done rather in the early hours of the day than late at night. A due amount of exercise is to be taken in the open air. But, unfortunately, persons of this cast of mind do not always take the proper kind of exercise. How often, in urging upon such a man the necessity of exercise, one is answered, rather indignantly it may be, that he walks regularly so many miles a day. And how often one has to reply, "That is not exercise." For a neurotic man thinks while he walks, turns problems over and over in his mind, arranges the outline of his next sermon, sketches a lecture, devises some mercantile scheme. The mind therefore gets no rest. What is urgently required is that the exercise such a man takes should be interesting to him and should be absorbing. He cannot think as he rides a fresh horse, as he cycles, as he plays golf. Pursuits of this kind are the exercises for a neurotic man or woman, and mere walking, the ordinary "constitutional," is not exercise at all in the proper sense.

Allusion has already been made to the dangers of alcohol in such persons, and these dangers are great. It is in neurotics that one sees the true form of alcoholism, that which consists in outbursts of hard drinking with intervals of sobriety. You should make it a rule never to recommend the use of alcohol in any form to a neurotic without grave consideration. And the same remark applies to morphia with perhaps even more force. If you do see good reason to give that or other similar drug, arrange so that its administration is not in the hands of the patient nor the dose at his discretion. Cocaine is more dangerous still. It should never be administered to a neurotic for any condition which would require its frequent repetition. I have known cocaine, used as a nasal spray, produce an almost irresistible craving in a neurotic person.

In conclusion may I venture to express the hope that in this brief and necessarily imperfect sketch of those principles which should regulate the management of neurotics to the end that actual nervous disease may be warded off, you may find some thoughts which may be of service to you in guiding such patients towards a healthy robustness of mind and of body.

TWO CASES OF SCLERODERMA, WITH REMARKS

By ALEXANDER JAMES, M.D., F.R.C.P.Ed.

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S. C., aged 34, a mason, was admitted to Ward 31, 20th November 1898. His family history was fairly good, his surroundings at home quite satisfactory, but at work he was much exposed to cold and wet. He seems to have been perfectly healthy till about the age of fourteen, when he injured his right index finger and had a fall on his head. He tells us that ever since this finger has remained stiff, and that after his fall he was for years liable to headaches. For these headaches he was in the habit of bathing in the sea, and he then noticed that the cold caused the fingers, specially of the right hand, to become cold and numb. This peculiarity, however, after some years passed off, and he was perfectly well till fourteen months ago. At that time he was much exposed to cold, and he noticed that his right index finger became pale and then blue with every exposure. After a few weeks, a little bit of the point of the index finger sloughed off, the sloughing process being attended with great pain. Next, the other fingers became similarly involved, sloughing, however, only occurring to a slight extent at the point of the little finger. Some four months after, a similar condition appeared in the left hand, the index finger being first affected, sloughing occurring at the points of the index and middle. At this time the toes felt cold also, but this was not so marked, and there was never any loss of tissue there. The ears and the tip of the nose also felt cold and painful, and three months ago there was a little sloughing from the upper part of each tragus.

About three months ago, the patient's attention was directed to a peculiar hardness of the skin below the chin. He told us that this was pointed out to him by his barber in shaving him. Since then the skin hardness has affected his hands and arms, and has indeed spread to some extent over the entire body. It is well marked under the chin and over the cheeks, and the patient's power of moving these parts is impaired. The forehead and cheeks appear smoother than normal, and when

wrinkling the forehead, frowning, closing the eyes, laughing and whistling, the patient is conscious of a tightening of the parts. He cannot open his jaws widely, and his biting power is lessened. He can only to a slight extent protrude the tongue. He says also that his lower jaw is further back than it used to be, so that when he clenches his teeth there is a greater interval between the posterior surfaces of the upper and the anterior surfaces of the lower incisors than there used to be.

The skin of the neck is hardened, he cannot bend the head backwards so well as formerly, and in the deglutition act the upward movement of the larynx is less free than normal.

Over the hands and arms, the scleroderma is specially well marked. The fingers are bent, and the skin is hard and resistant. The fingers admit of flexion to a slight extent, but extension is impossible. The movements of the wrist are better performed and at the elbow there is comparative freedom, but pronation and supination are impeded.

On the feet and legs the hardness is present, but to a much less extent. All over the trunk it is distinctly marked. He tells us that for some time he has not been able to put on or take off his shoes properly, the tight skin interfering with the movement of the trunk. With the spirometer his respiratory capacity is found to be only 112 cub. inches. This is less than half the normal for his height (5 feet, 9 inches).

On the back of the hands, on the arms, upper lip, and to a certain extent on the chin and submaxillary region, the hair has, in varying degree, disappeared. The nails appear normal, but the patient states that they are more furrowed and brittle than formerly. There is nowhere any apparent diminution of the sweat secretion, indeed he has noticed for some months past that his hands sweat readily.

Over the anterior abdominal wall there is a slight amount of brown yellow pigmentation, with a few small, slightly marked leucodermic patches.

Alimentary System.—This is practically normal. There is no change in the mucous membrane of the mouth. Swallowing, as already mentioned, is a little interfered with, owing to the lessened mobility of the larynx. The liver, on percussion, appears slightly enlarged.

Hæmopoietic System.—A few lymphatic glands, about the size of small peas, can be felt in the back of the neck. In the

PLATE IX.—SCLERODERMA. SHOWING CONDITION OF HANDS AND FINGERS, AND THE EXTENT TO WHICH THE MOUTH CAN BE OPENED AND THE TONGUE PROTRUDED.

groins the glands are slightly enlarged; in the axillæ they cannot be felt. The thyroid is atrophied, the spleen is enlarged, being 7 inches in its long diameter. Red blood corpuscles about 4,000,000, whites 7000, hæmoglobin 60 per cent. The reds are not altered in shape or size, and form rouleaux well. The whites show no alteration from the normal proportion. The blood plates are rather numerous, and the blood is somewhat dark in colour and coagulates rapidly. The circulatory and respiratory systems are practically normal. Pulse regular, but cannot well be felt, owing to the tense skin.

Genito-urinary System.—Bladder function normal, urine quantity, 40 oz., sp.g. 1020, rather pale, reaction tending to neutral, phosphates rather abundant. There is no history of albuminuria or hæmaturia. As regards the generative function, the patient describes a distinct impairment of late.

Nervous System.—Pricklings and numbness in the hands are still felt, but not so marked as formerly. As regards the cutaneous sensibility, it was found that although the patient had not noticed any impairment, it was distinctly lessened, both to touch and temperature. The sensibility to the faradic and galvanic currents was also less than normal. There was no muscular tenderness on pressure, but at the points of those fingers where there had been loss of tissue, there was hyperæsthesia to pressure.

The motor functions are all more or less impaired, explicable by the mechanical effects of the tightened skin and the wasting of the muscles. There is no tremor. The superficial and deep reflexes are not more lessened than the muscle and skin condition can account for. The organic reflexes are practically normal.

His general nutrition is much impaired. His weight, which used to be 10st. 3lbs., is now 8st. 5lb. The muscles are all very much wasted, and show lessened sensibility to both the faradic and galvanic currents. Temperature varies from 97° to 100° F.

Agnes S., aged 28, formerly a domestic servant, was admitted December 27th, 1898, complaining of stiffness and pains in the fingers, and stating that she had been ill more or less for five years.

Her family history is fairly good, her mother is dead, and patient believes that she had some affection of the fingers.

Patient had scarlatina, mumps and measles as a child. She had rheumatic fever at the age of nine, and again at the age of sixteen.

Her present illness seems to have begun five years ago; she was then working as a servant, and had hard work. The index finger of her right hand became painful and swollen, and at its point fluid seems to have collected under the epidermis. This was opened by a doctor and dressed. The wound was slow in healing, and when it had healed it was much benumbed, and she noticed that when she touched anything with it the pain would shoot up to the elbow. The little finger next became affected, and gradually all the other fingers of this hand. Two years after this the left hand became involved. She first noticed what appeared to be a "chap," as the result of cold, at the second metacarpal phalangeal joint. Here fluid collected under the epidermis, burst, and discharged matter, causing great pain. Gradually all the fingers of this hand have become also stiff and numb.

At present the fingers of both hands are stiff, and the skin over them is hard. Whenever she is exposed to cold the hands as far as the wrist get numb and painful. When they are heated after being cold, the pain in her fingers is excruciating.

A certain amount of hardening of the skin can be made out over the arms and on the face, especially over the malar bones. The skin of the trunk is less affected, but over the abdomen there is some hardening. The condition is hardly noticeable on the legs and feet.

As regards movement, she cannot extend the bent fingers, but the movements of the hands, arms, face, and trunk are only very slightly impaired.

Sensibility to touch, pain, and temperature are slightly impaired in the fingers and hands, she seems to be able to detect cold more readily than heat. With the exception of long-standing strabismus of the right eye, her special senses are normal.

The digestive system appears normal.

Hæmopoietic system.—There is no enlargement of any of the lymphatic glands. The spleen is enlarged, measuring 8 inches in its long diameter.

Examination of the blood shows the red corpuscles about 4,000,000, white blood corpuscles about 6000, hæmoglobin 60 per cent. The thyroid gland is not smaller than normal.

The circulatory and respiratory systems are normal.

The urine is pale, acid, sp. gr. 1010. Menstruation is irregular, sometimes painful, and there is slight leucorrhœa.

Believing that an examination of the skin and blood for organisms might be of interest, I asked my friend Dr Charles Porter to perform this for me, and the following is his report :—

"February 5, 1899.—The more affected fingers were chosen for puncture. After being scrubbed with lysol and soap and water, the finger point was covered with a corrosive (1 in 100) poultice for five minutes. This was then removed, and the finger washed with boiled water. With a sterilised needle the skin was pricked, and the drop of blood which exuded was transferred with a platinum loop to a broth tube, and incubated at 37° C. In both cases the quantity of blood got was very small on account of the thickness of the skin, the sensation being that of piercing cartilage, and it was necessary to squeeze a good deal before anything came.

The broth tubes were examined, and at the end of twenty-four hours a pure culture of cocci, occurring singly, in pairs, and in clumps, was found. From these, sub-cultures were made in milk and in jelly (slab). The milk incubated at 37° C. was found coagulated in four days. In the jelly, incubated at 22° C., growth was found at the end of twenty-four hours, and was strictly localised to the line of inoculation. In the second case (A. S.), liquefaction began in a few days, and rapidly extended till the jelly was completely fluidified, the whole being clear, save at the bottom, where there was a yellowish-white deposit. In the first case (S. C.), the jelly did not liquefy. Thus, though microscopically the organisms in both cases resembled each other closely, they differed in their action on jelly."

In connection with these organisms, it is of interest to note that they were also found in the blood from a skin puncture of a patient in the ward at the same time, suffering from Raynaud's disease. The patient was a healthy-looking man, J. N., aged thirty-four. He had an excellent family history and had always been well, although, as a miner, he was exposed much to cold and wet. Five months before his admission to the Infirmary, the palm of his right hand had been severely crushed by a stone. About a month afterwards it began to feel very cold, especially on the middle finger. This was shortly afterwards followed by a similar condition in the ring

and little fingers of that hand. He then noticed that the skin of the tips of these three fingers became hardened. A bleb next formed at the tip of the middle finger. This burst, and shortly after a similar condition appeared on the ring finger. Ever since then, on the slightest exposure to cold, those fingers get blue up to the metacarpal phalangeal joints, and they feel quite numb. At times also he has sharp pains shooting down from the arm to the points of those fingers. He has never noticed his urine red or dark in colour. In every other respect he is perfectly healthy, but the skin at the points of those fingers is somewhat thickened, and slight superficial ulcerations are present at the points of the middle and ring fingers. After residence in the Infirmary for two weeks the condition greatly improved, but puncture of the fingers and examination of their fluid revealed organisms similar to those found in the scleroderma cases. In this case, however, blood was much more easily obtained, as the skin at the point of the finger was comparatively soft, and further, as in the case of S. C., the organisms did not liquefy jelly.

As regards morbid anatomy in scleroderma, an examination of recorded cases reveals the following changes to occur. Epidermis not much changed, but a marked increase of the white fibrous tissue of the chorium, causing pressure on or constriction of the neighbouring parts. The papillæ are flattened, and the hair follicles are pressed upon and atrophied. The sweat glands, according to Unna, are partly narrowed and partly dilated, they are almost always displaced but not otherwise altered. The elastic tissue of the skin seems to be relatively or actually atrophied, whilst the non-striped muscular fibres are said to persist. The blood-vessels and lymph spaces seem to be pressed on and narrowed, but the changes, if any, which occur in the nerves are not well known. The pigment in the skin is usually somewhat increased. In the deeper parts of the true skin, the fat lobules and fatty tissue tend to disappear, and cases have been described in which the connective tissue of the skin was firmly adherent to the underlying muscular fasciæ. The underlying muscles tend to become more or less wasted, and a change, like that of an interstitial myositis, may occur. Apparently, as the result of pressure, bones may become atrophied. This is well shown in the accompanying skiograph of the patient S. C., in

PLATE X.—SCLERODERMIA SHOWING ATROPHIED CONDITION OF TERMINAL PHALANGES.

which there is great shortening of the terminal phalanx of the index finger.

The thyroid, spleen, and liver may show enlargement, but these changes are not constant.

When we come to the study of the pathogenesis of scleroderma, we find that little is really known, but the various theories may be summed up as follows :—

I. That the increased amount of fibrous tissue may be due to a chronic inflammation of the corium of the skin, as indicated by Rindfleisch, Chiara, and others. This may, in its turn, be the result of some toxic or infective substance. Thus, rheumatic perspirations have been suggested by some, and Dercum has suggested, in a recent article, a similarity as regards pathological processes between scleroderma and rheumatoid arthritis. On the other hand, infective organisms have been regarded as the essential factors, as in leprosy and, possibly; in ainhum.

II. That the scleroderma may be due to some change in the blood vessels by which obstruction to the flow is brought about, just as fibrosis in lung, liver, or kidney may be brought about by backward pressure in heart disease.

III. That it may be due to some block in the lymphatic system, as elephantiasis is the result of a block by the filaria. Hebra, Kaposi, and others regard a lymphatic block as the probable cause.

IV. That it is due to some metabolic disturbance, as in myxœdema, acromegaly, etc.

V. That it is due to some nerve or trophic disturbance, as in Raynaud's disease, angioneuroses, etc.

From the aspects of etiology and pathology, the following are the suggestions which the study of our cases seems to offer.

(*a*) That in them the tissues were specially sensitive to cold, and that the parts most exposed were the parts specially affected, fingers, skin of face, ears, etc.

(*b*) That, as has often been observed previously, the condition thus closely resembled Raynaud's disease. In this connection it is interesting to remember (1) that at the time the scleroderma cases were in hospital, the number of cases of Raynaud's disease in the wards and attending the Infirmary was much above the average ; (2) That the bacteriological exami-

nation of the skin or blood in a case of Raynaud's disease revealed organisms similar to those found in the scleroderma cases; (3) That in this case of Raynaud's disease, as in one of the scleroderma cases, there was a history of traumatism.

Taking everything into consideration, I am inclined to believe that in such cases the scleroderma may best be regarded as being the result of the fact that wherever that morbid condition which we vaguely term "defective trophic power" exists, we have a tendency to increase of the less complex, and diminution of the more complex, tissue elements; we have, as it were, a sacrifice of quality to quantity. This view would give, to changes in the blood vessels, to alterations in the lymphatics, to vaso-motor disturbances, to toxic substances or infective organisms, a comparatively subsidiary place. It would admit at the same time, however, that any one of them might, in any given case, be the factor of preponderating importance. With skin tissue, as with other tissues, we must never forget that, though the causes of what we call irritation may be numerous and complex enough, the modes of reaction to these irritations are few and simple. The organisms which we found in our cases I regard as associates of the unhealthy condition of the skin, rather than as etiological factors in the morbid process.

The course and prognosis in scleroderma can best be gauged from the following table, quoted from Lewin & Heller's monograph :—

Out of 251 cases,

Recovery occurred in 40.
Improvement in 75.
Downward progress or no improvement in 74.
Death in 62.

Of our cases, the second and slighter case (A. S.) showed distinct improvement; the first and more severe (S. C.) has made rather less progress.

The treatment employed was rest, good diet and warmth, the patients constantly wearing warm woollen gloves. Massage, with weak salicylic and mercurial ointments, seemed to be grateful, and, in addition to arsenic, iron, cod liver oil, iodide of potash, thyroid feeding was employed. The patients, however, were both of opinion that thymus tabloids suited them better than did the thyroid.

A SIMPLE METHOD OF REDUCING DISLOCATIONS OF THE SHOULDER BY MANIPULATION

By A. G. MILLER, M.D., F.R.C.S.Ed.,
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I HAVE been tempted to write this paper by a variety of motives. In the first place, I find that on all hands there is a tendency to describe and speak of Kocher's method as if it were the only method of reducing dislocations at the shoulder-joint by manipulation. In the second place, I have for more than twenty years employed and taught a method which is simpler, and in my hands has proved unfailing. Thirdly, a few months ago a country practitioner told me that he had reduced a dislocation of the shoulder without chloroform, in a strong man, by this method, which he remembered to have seen me

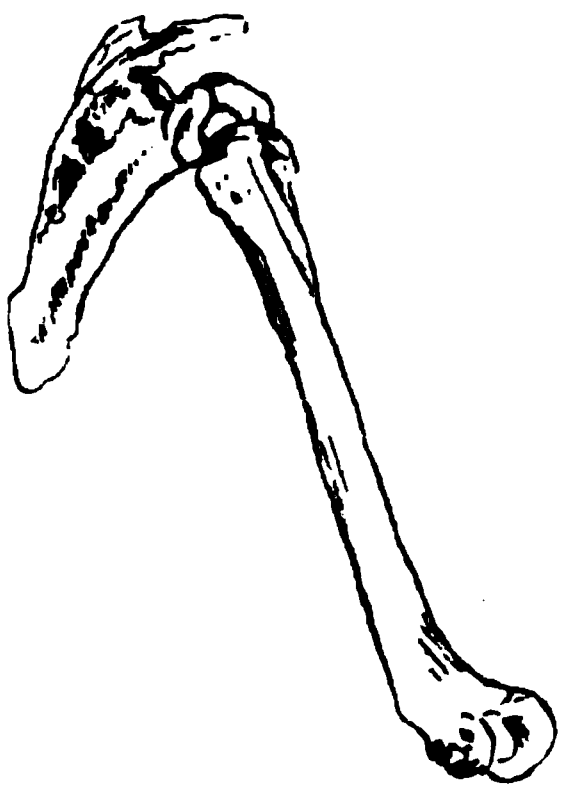

FIG. 1.—Subcoracoid dislocation after Flower.

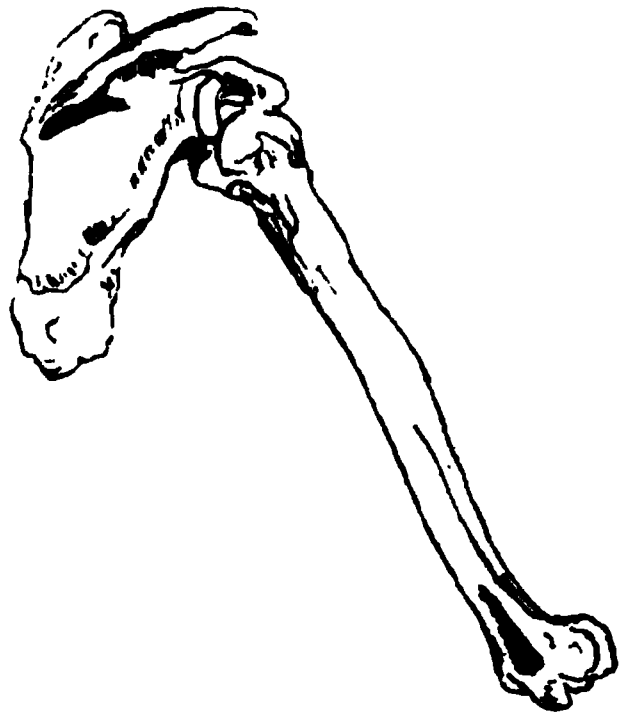

FIG. 2.—Intracoracoid dislocation. This figure shows even better than fig. 1 the locking of the glenoid with the groove in the neck of the tumerus.

employ in the Infirmary. The dislocation was a day old, and had resisted attempts made with the heel in the axilla.

On becoming a lecturer on surgery, when conducting my summer class of operative surgery, I made experiments on the dead body as to the methods of reduction by manipulation, and established to my own satisfaction that the method I am about to describe was the best and simplest then known.

Following the description of subcoracoid dislocation (admittedly the most common form) by Mr Flower in "Holmes' Surgery"[1] (figs. 1 and 2), we find that the head of the humerus

[1] 3rd ed., p. 973.

is displaced downwards and forwards, that the capsule is lacerated at the lower and anterior part, that the humerus is lying with the groove between the articular surface and the greater tuberosity in contact with the anterior edge of the glenoid fossa, and that the humerus is rotated outwards and slightly abducted. To these facts Mr Caird has added[1] that the edge of the glenoid actually indents or fractures the neck of the humerus, and that the bones are more or less locked together in their relationship.

Accepting this as a correct description of the state of matters, I consider that reduction is prevented or opposed by—

1. Muscle contraction—especially the supraspinatus and the deltoid.

2. Locking or impaction of the neck of the humerus against the glenoid edge.

To undo this only two movements are necessary—

1. Elevation of the arm to relax the muscles.

2. Rotation inwards of the humerus.

In the dislocated position the articular surface of the humerus is completely displaced from the glenoid. When, however, the arm is lifted upwards into a position at right angles to the body, the smooth articular surface of the humeral head is brought very near the smooth glenoid surface. The two may even be brought slightly in contact, when, one can imagine how easily, the head of the humerus may be made to glide back into position. Many authorities mention how mere elevation of the arm has reduced dislocations that were very recent. Perhaps some spontaneous reductions may occur in this way.

Another result from this elevation of the arm is that the locking of the neck of the humerus on the edge of the glenoid is undone. This being so, it requires only slight internal rotation of the humerus in its long axis, to make the head of the bone glide into its normal situation. Dr David Waterston, in a recent pamphlet on Kocher's method, extracted from the *British Medical Journal*, says that reduction is prevented by the locking of the neck of the humerus and glenoid edge described by Caird, and that it is the *inward* rotation that "disengages the indent from the tip of the glenoid."

[1] *Edin. Med. Jour.*, Feby. 1887.

My experience is that reduction by this method occurs without any snap or jerk, and that often the operator is unaware of the reduction (as also the patient) till the filling out of the deltoid region and free movement of the joint prove the reduction to be complete.

Let me now describe the process by manipulation more exactly. Suppose a recent case. The patient being seated on a chair (fig. 3), the surgeon stands at the injured side (say the right) and takes the arm in both hands; one (the left) being above the elbow, the other (right) above the wrist, the arm being bent to a L at the elbow. An assistant stands at the patient's other side and steadies the scapula with both hands.

The surgeon then (having of course made sure that there is a subcoracoid dislocation) gently and slowly elevates the arm, making traction outwards from the body, at the same time assuring the patient that what he is doing will not be very painful, and that it is not the actual reduction but merely a preliminary. If the patient should resist, then the surgeon may wait for a while, or administer an anæsthetic.

FIG. 3.—Position of patient and method of reduction practised by writer.

When the patient has ceased to resist the arm will come slightly towards the surgeon; then is the time to rotate the humerus by dropping the hand, and the head of the humerus will glide into position. If the dislocation has been "out" for some time—a day or two—then the patient should be laid on a table, and an anæsthetic administered. The same procedure as above is then gone through. If reduction does not occur at once, the humerus may be freely circumducted, so as to break down any adhesions that may have formed, and to widen the opening in the capsule.

I may repeat here that I have never failed by this method, except in one or two cases in which every other method failed and the knife had to be called into requisition. On the other

hand, this method has succeeded in my hands and in others' when other methods had failed.

In one case I succeeded single-handed. The patient was a stout old man. I found him in bed. I turned him on his sound side, got up on to the bed and stood over him, then grasped the dislocated arm by the elbow, and extended the arm from the side. The head of the humerus quietly glided into its place, much to my satisfaction as well as my patient's.

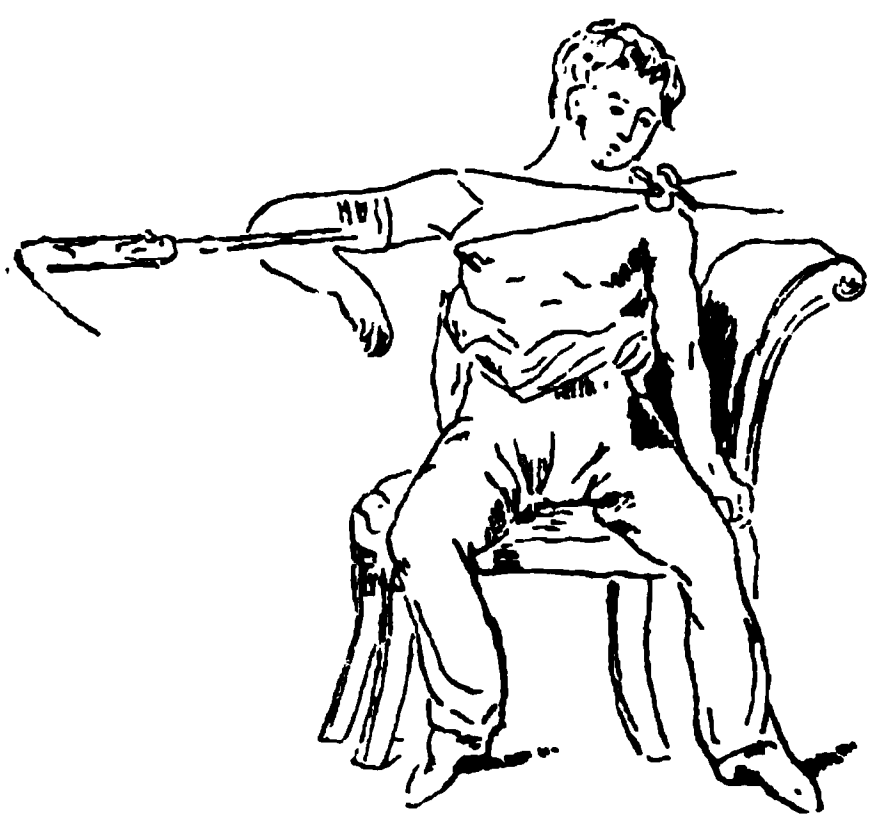

FIG. 4.—Copied from Sir Astley Cooper's work, p. 375. The position closely resembles that employed by the writer.

Reduction may be aided sometimes by a manœuvre which is recommended by many authorities, viz., pressure in the axilla, with thumbs or fingers on the head of the humerus (Avicenna's method).

To show that this method is not new, but has been known to and occasionally (one might almost say accidentally) practised by many surgeons, though not specially recommended by any, I give the following extracts:—

Sir Astley Cooper,[1] in describing his method, which he calls "by manual extension," in which he recommends extension at right angles to the body (see fig. 4), says: "Whilst the extension is proceeding, I have seen a gentle rotatory motion of the arm diminish opposition of the muscles, and the bone suddenly slip into its place."

Malgaigne, in his classical work on fractures and dislocations,[2] speaks of reduction being made by horizontal extension outwards, with pressure on the head of the humerus (Avicenna's method), or with rocking (*bascule*) of the humerus.

Hamilton[3] deals very fully with the various methods of reduction. In discussing the general subject he says: "In the simplest forms of the dislocation the most rational mode of reduction will be to elevate the arm sufficiently to relax the

[1] 1842, new edition by Bransby B. Cooper, p. 374.
[2] 1855, vol. i. p. 480, etc.
[3] Seventh American edition, 1884, p. 697, etc.

overstrained deltoid and supraspinatus muscles, which, together with the upper and untorn portion of the capsule, bind the head of the bone in its new position, and to pull gently in the same direction, in order to overcome the moderate resistance offered by several other muscles, but whose tension cannot be relieved by the same manœuvre."

He, like Sir Astley Cooper, believed in extending against muscular tension, and so also missed the true explanation of the *modus operandi* of extension (so-called) at right angles to the body.

In another place Hamilton says :[1] "Occasionally it will be only necessary to elevate the arm to an acute angle, or a right angle with the body, when, the resistance of the deltoid and supraspinatus being overcome, the bone will at once resume its place. In several instances which have come under my notice nothing more has been necessary ; and where it can be done, the least possible pain and injury are inflicted. It is the method, therefore, which in all recent cases I have first tried, and would wish to recommend. By it I have more than once succeeded when other and more violent efforts have failed."

Hamilton makes some more remarks in the same direction, and then goes on to describe at considerable length the methods of Sir Astley Cooper, Nathan Smith, Gunn, La Mothe, Skey, Kocher and others. Almost last of all he describes the method of Prof. H. H. Smith of Philadelphia :—

"His method consists, first, in flexing the forearm upon the arm, while, at the same moment, the elbow is lifted from the body ; second, in rotating the humerus upwards and outwards, employing the forearm as a lever ; and, third, in reversing this last movement, that is, rotating the humerus downwards and inwards, while at the same moment the elbow is carried again to the side."

In commenting on this method Hamilton says : "Outward rotation of the humerus will inevitably thrust the head further forwards . . . while the *rotation of the humerus in the opposite direction will alone often be sufficient to carry the head directly into the socket.*"[2]

From these extracts you will see whence I get my ideas and my manipulations.

[1] Seventh American edition, 1884, p. 698.
[2] The italics are mine.—A. G. M.

I do not know whether to call the method that of H. H. Smith, for I do not employ external rotation, neither can I call it that of Hamilton, for in the extract I have given from his writing (p. 698) he does not specially advocate or recommend this method, neither does he describe the mechanism as I understand it.

I have been unable to obtain the original description by H. H. Smith[1] of his method, but in every instance in which I have seen it referred to, the external rotation has been described as an essential part of the performance. I have looked up a variety of authors, and have found his method mentioned by Hamilton, Pickering Pick, Clement Lucas (in Heath's Dictionary), Flower and Hulke ("Holmes' System," but not ascribed to H. H. Smith), Gross, Walsham (who describes a similar method as practised at St Bartholomew's), Bryant, and Ashurst. On the other hand, this method is not mentioned by Treves, Wharton, and Curtis, Tillmann, Erichsen, Agnew, Mansell Moullin, Park's "Surgery by American Authors," nor even the "American Text-Book of Surgery."

CHRONIC PROGRESSIVE CHOREA

By GEORGE ELDER, M.D., F.R.C.P.E.,
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CHOREA beginning in adult life or in old age has for a considerable time been recognised to be quite a different disease from the ordinary chorea—Sydenham's chorea—of early life. One type of it especially has in the last few decades had much attention paid to it, viz., hereditary chorea or Huntington's disease. This disease, so named from having been first carefully described by Dr Huntington of Long Island, has as its chief characteristics the following:—The onset is usually in adult life; there is a strong hereditary tendency; the chorea is progressive; there is mental enfeeblement; the disease is always fatal, usually after a course of from five to twenty years. Other forms of chorea resembling this more or less closely, except in the hereditary tendency, occur; and so Herringham (5), in 1888, proposed to divide all cases of chorea occurring

[1] On the reduction of luxations of the head of the humerus simply by manipulation. H. H. Smith, *Med. and Surg. Reporter*, Philadelphia, 1861.

in the adult and old into four classes, viz. (1) ordinary chorea minor (Sydenham's disease) in the adult; (2) cases showing choreoid movements due to subcortical lesions in connection with the motor tracts of the brain; (3) Huntington's chorea—the hereditary form with insanity—in which males are affected more frequently than females; and (4) chronic and incurable chorea of adults and the aged without hereditary tendency. Of the last class he described two varieties—(*a*) those accompanied by mania or dementia, and (*b*) those with no mental symptoms.

Of these four classes the two first are quite distinct from the others, although the second class ought rather to be grouped under hemiplegia than under chorea. In it the movements nearly always succeed, rarely precede, the hemiplegia, and the movements are coarser than are those in the other forms. Cases of Sydenham's chorea beginning in adult or old age, though they do occur, are evidently very rare. Some such cases were reported by the Collective Investigation Committee on Chorea of the British Medical Association (6) in 1887, and others were reported by Russell (11), Sinkler (12), Ferguson (3), etc. Riesman (10), however, writing in 1897, says that, after a careful search into the literature of the subject, he has only been able to find thirteen cases altogether. The third and fourth classes of Herringham, therefore, include the vast majority of the cases of adult chorea. Except the hereditary tendency, however, there is no feature distinguishing definitely the one class from the other. It is true that, in the hereditary form, the proclivity to mental enfeeblement (actual dementia in most cases) is more marked than in the non-hereditary form. Nevertheless, cases are found with marked mental enfeeblement where there is no trace of any hereditary bias. Hence it was suggested by Hoffmann that all such chronic cases, whether hereditary or not, should be grouped together as "chronic progressive chorea." The same view, viz., that there is no sharp dividing line between the groups, is also taken by other writers on the subject, such as Osler (9), Wollenberg (15), etc.

The following case, which has recently come under observation, and where, without any hereditary tendency, there is some mental weakness along with the chronic movements, seems worthy of being recorded.

C. W., a woman, aged fifty-four, was seen in November 1898 complaining of movements which she could not control, and

which had lasted for four years. There was no family history of choreic movements, or of any nervous disease in the family; her father died of consumption, her mother of child-bed fever; she had one sister alive and well, no brothers or sisters dead. Though always somewhat excitable, she had never had any illness of importance till the present. She had not had rheumatism; did not marry till fully forty years of age; had had no family and no miscarriages. Her husband never had any venereal disease. Between four and five years ago she fell from a chair and sustained a Colles' fracture of the left arm, for which she was in hospital several weeks. On her return home, her husband noticed that there were involuntary movements of the right hand. These spread to the right arm, to the left hand and arm, and later to the legs, face and trunk. Within the last several months the movements have become considerably aggravated, and her husband has noticed that her mental condition has become feebler. There have been no fits.

On examination, patient was seen to be a thin woman with a "silly" expression, who often became emotional, smiled frequently without reason, and could not sustain her attention properly. There were marked movements, involuntary, purposeless and arythmic; these were fairly sharp, and resembled those of ordinary chorea. The upper extremities were most severely affected, and the fingers and hand more than the elbow or shoulder, but the legs, face and body were also involved. Besides movements of the head as a whole, the eyebrows were raised, the eyelids closed, the mouth twitched up at the corners, and so on. The speech was interfered with a little, evidently from movements of the muscles of articulation, and now and again a peculiar snort was produced, the result of a sharp movement of inspiration at irregular times. The movements became worse when the patient was under observation, while voluntary acts lessened them or made them completely disappear for a short time. Thus, when asked to write her name, by stopping between every letter or every other letter, she managed fairly well; whereas, if she tried to go right on, the twitchings returned and spoiled it considerably. There was no loss of power and no affection of sensation; the knee-jerks were exaggerated, the muscles responded well to the faradic current. There was no giddiness or vomiting, no affection of the cranial nerves, and the fundi were normal in appearance.

The movements of chronic progressive chorea do not disappear as do those of Sydenham's chorea, but last for the remainder of the patient's life. In character they resemble closely those of ordinary chorea. Osler (9), it is true, says that in Huntington's disease the movements are slower, but this has evidently not been so in the majority of cases recorded; and in the case just reported it was impossible to detect any difference from ordinary choreic movements. The whole body may be affected, but usually the upper extremities are more involved than the legs, face and trunk; sometimes the condition is unilateral. Speech may sometimes be seriously interfered with through affection of the muscles of articulation, phonation, and respiration, and a sudden inspiratory snort may occasionally be produced (14), as in the writer's case, by contraction of the diaphragm. As a rule, the movements are increased when the patient is watched, or becomes emotional from any cause; on the other hand, they are lessened for a short time by voluntary action. The movements cease during sleep, there is no loss of power in the muscles, and in most of the cases recorded the knee-jerks have been increased. There is no relationship with rheumatism, and valvular disease is seldom present.

As to the etiology of the disease, beyond the remarkable tendency in certain families to Huntington's disease, but little is actually known. The onset has sometimes followed an emotional disturbance, but frequently enough no apparent exciting cause could be made out. A few cases have followed on a blow on the head, and in one reported by Dercum (2) the movements were just as severe the day after the injury as they were when she was shown two years later. In the case recorded above, the fall and injury to the arm had no doubt something to do with the onset of the disease; but it will be noted that the first movements were observed in the other arm, and that they came on gradually, not suddenly as in Dercum's case, and are still progressing. In some cases where there is a strong family tendency, the disease has manifested itself at about the same age in all the patients. Occasionally in hereditary cases it has appeared before adult life, and Riesman (10) has shown that, on an average, the age of onset is considerably earlier in the hereditary than in the non-hereditary cases. Thus, whilst of sixty-six cases of Huntington's disease

only ten began after fifty years of age, of the sixty-five cases without hereditary tendency which he was able to collect from literature, as many as forty-two began after fifty years.

The pathological conditions which have been found in the cases examined *post mortem* have varied in details, but the chief change in most of the cases has been :—atrophy of the convolutions of the brain, particularly of the motor areas. Associated with this, and in all probability secondary to it, there have been found, more or less frequently, excess of cerebro-spinal fluid, pachymengitis interna, etc. On microscopic examination the important change is a degeneration, of a greater or less degree, of the nerve ganglia of the cortex, most marked in the Rolandic area, less marked in the frontal area, and much less in the posterior convolutions. In addition, the perivascular and pericellular spaces are usually enlarged, and within are sometimes collections of small round cells. The blood-vessels themselves may be somewhat diseased, and a certain amount of degeneration (secondary) in the motor tracts is not uncommon. Dr Joseph Collins, one of the most recent contributors to the pathology of the subject, expresses his opinion that the disease consists in "a chronic parenchymatous degeneration of the cortex, principally of the Rolandic cortex, with consecutive and secondary changes in the interstices and vascular system."

1. Collins, *American Journal of the Medical Sciences*, September 1898.
2. Dercum, "International Clinics," vol. iii., p. 292. 1891.
3. Ferguson, *Lancet*, July 11th, 1885.
4. Graves, "Clinical Lectures," vol. i., p. 537.
5. Herringham, "Brain," vol. xi., p. 134.
6. M'Kenzie ("Collective Investigation Committee on Chorea"), *British Medical Journal*, February 26th, 1887.
7. M'Learn, *Lancet*, February 21st, 1885.
8. Lannois and Paviot, *Revue de Médecine*, xviii., No. 3. 1898.
9. Osler, "On Chorea and Choreiform Affections," 1894.
10. Riesman, *American Journal of the Medical Sciences*, p. 180. August 1897.
11. Russell, *Medical Times and Gazette*, vol. i., p. 459, also vol. ii., p. 627. 1878.
12. Sinkler, Wharton, *Journal of Nervous and Mental Diseases*, July 1881.
13. Saundby, *Lancet*, November 29th, 1884.
14. Suckling, *Lancet*, November 2nd, 1889.
15. Wollenberg, "Chorea Chronica Progressiva," "Specielle Pathologie und Therapie.," Nothnagel, Bd. xii., Theil ii., Abtheilung iii. (Here a full Bibliography of the whole subject will be found.)

MILK-BORNE DISEASE[1]

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My first duty is to thank the Honorary Secretary of the Social and Sanitary Society for asking me to address you on this most important question of "Milk-borne Disease." From your Annual Report I find this Society has for thirteen years been engaged carrying on an active propaganda with the object of improving the social and sanitary condition of the poorer classes in Edinburgh. I find from the Report, that such subjects as "Thrift," "Habit and Control," "Common Errors in the Rearing of Children," "Consumption," have been considered, and leaflets embodying information on these subjects have been circulated in the poorer houses of the city. Truly your work deserves the support of all who give ear to the cry of misery, poverty, and disease, and I would have considered it ungracious and unsympathetic on my part to have refused the request of your Secretary.

I am asked to speak of Milk as a Vehicle of Disease, or, as I otherwise term it, Milk-borne Disease. The text is a concrete one, and is sufficiently definite to prevent wandering away into side issues all connected with the question of milk—Milk Supply and Milk Consumption.

Milk is an article of diet, not merely a drink or beverage. It is in itself a perfect food for the young, the middle-aged and the aged. This fact is now fairly well realised by people generally, but only within recent years.

The quantity of milk used nowadays as a food is enormous, and judging by the yearly increase of milch cows the quantity is clearly increasing. In 1895 there were 423,967 milch cows in Scotland, nearly half a million, one-fifth of which were in Aberdeenshire and Ayrshire. In 1896 the total number was 428,256.

In Edinburgh at the present time there are 3,000 milch cows; while in 1897 there were 2,644.

Milk to the chemist is a fluid consisting of 86 per cent. of water and about 14 per cent. of solids: fat, sugar, casein and salts of potash, lime, soda, etc. Milk to the bacteriologist is a valuable medium for the cultivation of bacteria, as it contains those chemical ingredients necessary for bacterial growth; and

[1] Paper read before Edinburgh Social and Sanitary Society.

this circumstance is very interesting from the fact that milk is therefore exceedingly liable to become the vehicle for the growth and transference of disease micro-organisms from animals to persons and from person to person, in ways which will afterwards be discussed.

To show that this is the case, the following experiments were made. A cubic inch of milk containing 153,000 bacteria was exposed at a temperature of 59° F.

1	hour	afterwards	it contained	539,750
2	hours	„	„	616,250
4	„	„	„	680,000
7	„	„	„	1,020,000
25	„	„	„	85,000,000

Samples of another milk containing 391,000 bacteria per cubic inch were exposed at a temperature of 77° and 95° F. with the following results :—

		At 77° F.	At 99° F.
6 hours	afterwards	14,620,000	45,900,000
9	„	36,550,000	57,800,000
24	„	13,702,000,000	13,812,500,000

These experiments are illuminant for showing the very high nutritive value of milk for bacteria and also the greatly increased value due to high temperature. The practical value to consumers of milk is that present-day milk ought to be first boiled (sterilised) and then refrigerated. I have not endeavoured to place before you any fixed standard for milk, as this is a question outside my present text. We are dealing only with cows' milk, and even normal cows' milk varies much in its composition according to the breed of the cow : Guernseys and Jerseys giving a milk with a higher proportion of fat than other cows. The quality varies also with the age of the cow, with its state of health, with the food it is supplied with. Some foods, such as turnips, give the milk an unpleasant taste, and some again render it poisonous. I need scarcely say that the housing and management of the cow exercise a most important influence on the quality of its milk. These considerations, however, involve details of dairy administration and hygiene not comprehended by my present text.

We are, I think, too much given to attribute all disease to

the presence or effects of bacteria, and are thus apt to ignore the influence of what I might call foreign bodies in milk, which may, and doubtless do, cause a considerable proportion of digestive disturbances in infants and children. I refer to such materials as particles of straw, hay, hairs, litter, dust, which too often we find at the bottom of our tumbler after the milk has been drunk. Dairymen very generally adopt some process of filtering to get rid of these matters which really ought never to find their way into milk. Their presence must, however, be taken into consideration, not only from their own inherent evil effects, but from another reason, viz., those particles, whatever they are, act as rafts for the conveyance of bacteria—harmful and harmless—from the roof, walls, floor of the byre and of the milk-house and milk-store to the milk itself. The highly absorptive power of milk while cooling from its normal temperature to that of the air must be taken into consideration, as during this process the gases arising from decomposing organic matter are apt to be absorbed by the milk, thereby giving it dangerous properties.

I do not wish to take up your time or consume my own allotted time-limit by referring to the harmless bacteria of milk. I would refer those who are interested in this subject to the little volume "Dairy Bacteriology," by Dr Von Freudenreich, and to various other books on bacteriology.

The ordinary bacteria found are those which cause lactic fermentation, ferments of casein, of blue milk, of red milk, of yellow milk, and so all these must be considered as undesirable, as we wish milk of its natural white colour, not blue, red or yellow. It is of much greater interest to know what diseases may be conveyed by milk. Foot and mouth diseases of cattle has caused disease amongst people using infected milk. In June 1881 a serious outbreak of sore throat, not scarlet fever or diphtheria, occurred in Aberdeen, due to the storage of milk in a foul atmosphere. There are certain specially infective diseases now well known to be conveyable by milk as a medium, and I shall devote the remainder of my remarks to this subject, beginning with the least common, viz., cholera.

Cholera is a microbic disease now known to be caused by the Comma bacillus of Koch. A case has been described where all the sailors on board a ship sickened with cholera

after having drunk milk mixed with water contaminated by cholera bacilli.

Diphtheria is also a microbic disease, and up to the year 1881 the late Ernest Hart had collected evidence showing that seven epidemics had been traced to milk infection.

Since then many outbreaks have been traced to the agency of milk. Mr Power, one of the Inspectors of the Local Government Board for England, in 1878 proved that diphtheria was disseminated by milk. In 1882 an outbreak was investigated by Dr Parsons, also Inspector of the Local Government Board. This outbreak occurred at Devonport. Another outbreak investigated at Hendon elicited the fact that there was a special incidence of the disease on those members of households who used unboiled milk, and that families who used, habitually, boiled milk, quite escaped. Many other outbreaks could be enumerated from the reports to the English Local Government Board.

In my own experience, an extensive outbreak in a village in Fife was produced through a milk supply. A case of diphtheria occurred at a dairy farm and was duly notified. The illness was slight and the boy was outside in about a week from his first illness. He was discovered to have been in the byre and the milk-house, and shortly afterwards an extensive outbreak occurred amongst the people getting milk from this source.

It is well known that cats suffer from diphtheria and that they have contracted the disease after drinking milk from cows suffering from inoculated diphtheria. In my own experience several cases of diphtheria occurred in a family, where I had good reason for suspecting the household cat, as the source of the outbreak. The cat had helped itself to some milk meant for the children's use, and they got what was left, and developed diphtheria. The cat, I ascertained, had been coughing and sneezing. I made a *post-mortem* of that cat, and found very suspicious appearances, and a bacillus closely resembling that of diphtheria. Whether cows do, or do not, suffer from diphtheria, I am not prepared to consider at this time, my intention being to deal only with what has been proved.

Scarlet fever.—One of the earliest to connect scarlet fever with milk, was the late Prof. Bell of St Andrews, in

1870. In the same year Dr Taylor of Penrith recorded an outbreak due to infected milk. Since then the various medical inspectors of the Local Government Board have chronicled numerous outbreaks of milk scarlatina. The late Mr Ernest Hart, up to 1881, had tabulated fourteen outbreaks due to milk. We have got beyond the time for tabulating outbreaks due to milk, and should rather tabulate those not due to milk. We can scarcely take up an annual report of the various county and town medical officers of health for Scotland, without finding some reference implicating milk. A considerable amount of evidence has been collected by the English Local Government Board, going to prove that cows actually suffer from a disease which produces scarlet fever in man. To enter into the merits of this theory would take me quite beyond the scope of this address. One of the most capable and independent critics of all medical theory in relation to public health, Dr Russell, the medical member of the Scotch Local Government Board, has described an epidemic of scarlet fever which he believed was due to disease of cows, and this warrants us in reserving judgment on this important thesis. The consideration of milk-borne scarlet fever demands somewhat more elaborate detail as to the ways by which the infection is brought into contact with the milk.

Let us take an ordinary country dairy for example. Here we find the dwelling-house forming one side of a hollow-square, the cow-byre, stables, etc., forming the other sides. Under the same roof, and very often in direct communication with the sleeping apartments, we have milk-store and scalding house for the milk vessels. A case of scarlet fever occurs, and the scales from the skin are wafted by aerial currents from the sick-room to the milk-store, or to the milk vessels, or to both. Too often we find that the same washing-house is used in common for scalding dishes and as the domestic wash-house. With every precaution that can be taken, even although the milk-store and wash-house are disconnected from the dwelling-house, how easy it is for light particles of epithelial scales to be wafted from the sick-room even to the milk-house. A carpet, or a curtain, or some article of clothing is shaken or beaten at a door or a window, and the infection is thrown free, to float like thistle-down to its first resting-place.

Then the milkers, coming from houses we know nothing about, add a very considerable risk to those already run.

After the milk leaves the hands of the dairyman, consider the hands that the milk cans have to pass through. The carter, who conveys it to the station, handles the cans. He may have scarlet fever in his house. They are put down on the platform of the railway station, where they form handy resting-places for the tired passenger waiting for his train. He or she may have come red-hot from a scarlet fever house. The cans have run the gauntlet of the porters or the guards till they reach the city, where other perils await the much troubled milk, in the shape of purveyors, milk vendors and milk distributors, till it reaches the milk consumer.

Enteric fever.—It is abundantly established that milk is accountable for many outbreaks of enteric fever. The literature showing the causal relationship of milk and typhoid is very abundant, and the first reference was made in 1858 by Dr Taylor of Penrith in the *Edinburgh Medical Journal.* Afterwards, epidemics at Islington, Marylebone, etc. were reported by the English Local Government Board medical inspectors. Sir Henry Littlejohn, and Dr Russell, late Medical Officer of Health for Glasgow, and now member of the Scotch Local Government Board, Sir James Russell, of Edinburgh, and many county medical officers have described milk epidemics of enteric fever. It seems unnecessary for me to dilate further on this well-known medium of enteric infection. In enteric you have a specific bacillus as the cause, and there are various ways it might reach the milk supply. 1st. By aerial currents conveying the bacilli which had been liberated by the evaporation of the medium in which they were. I have referred to dust acting as rafts for scarlet fever microbes, and doubtless they serve the same office for the enteric bacilli. That this aerial means of communication is rarer than others I at once admit, but it is one to be considered.

2nd. By attendants on enteric cases handling milk vessels while their clothes and hands are infective, or by infected clothing being washed in the same wash-house as the dairy utensils.

3rd. The commonest way is through polluted water either

having been added to the milk or used for cleansing the milk utensils. A water supply for dairies should be entirely above suspicion, and anyone considering where to obtain their milk supply should be entirely satisfied about the water supply of the dairy. We show little consideration and great courage when we drink an unverified tumbler of milk.

Tubercular infection by milk.—The prevention and cure of tubercular diseases are the subjects of the day in medical, sanitary, social, and even political circles. The general subject is, however, entirely beyond my object, and I shall endeavour briefly to give an abstract of the relationship of milk and tubercular diseases.

Milch cows, it is well known, suffer in a higher ratio from tubercular diseases than other farm stock, although the disease is not confined to them. The proportion of tuberculosed cows is very variously stated by different authorities in different countries. Nocard states ("Animal Tuberculosis") that the number of tuberculosed cows is calculated at from 10 to 25 per cent. Professor Bang, in Paris, in the year 1889, showed that bovine tuberculosis, quite unknown in Denmark in the last century, was imported into that country in 1840. Since its introduction, it had increased so enormously that the numbers of the tuberculosed carcases found in the abattoirs amounted to 16 per cent. of the total number of animals slaughtered.

In Paris, Nocard states that at the present time tuberculosis is rare amongst milch cows, owing to improvements in the management of milk businesses. Cows are only kept in the byres for a short time, being then fattened and killed, and replaced by young cows. In Saxony, over 18 per cent. of carcases in the abattoirs were found to be tuberculosed in 1893.

In Berlin, in 1891, 16 per cent. were tuberculosed. Of 10,000 cattle slaughtered in this country for pleuro-pneumonia in 1891, 12½ per cent. were tuberculosed, and in 1892, 22 per cent. In London, it is estimated that in some dairies as many as 70 per cent. were tuberculosed. In Scotland the percentage of cows tuberculosed is variously stated. I give the statements of veterinary inspectors for the County of Lanarkshire. Out of 3,000 animals (principally dairy stock) 25 per cent. were tuberculosed. Another gives the amount amongst cattle gener-

ally as 20 per cent. Another, speaking of milch cows, puts it as one-third to a half of the total.

Mr John Speir, a well-known authority, tested 200 cows, and found 30 per cent. affected. The Tuberculosis Commission reported that it had been proved to their satisfaction that the disease exists to a greater extent among cows than among other bovine animals. While it is of scientific interest to know what is the ratio of tuberculous to sound cows, for our purposes a small ratio of tuberculosed cows in a byre is quite sufficient to infect the whole milk when we keep in view how suitable medium it is for the growth and multiplication of micro-organisms. One cow in a dairy with a tuberculosed udder will be sufficient to contaminate all the rest of the milk with which it is mixed, and one tuberculosed cow may affect all the others in the byre. Having, I trust, shown sufficiently the wide prevalence of tuberculosis amongst milch cows, the next thing is to advance proof that the milk of these is infective. Professor Bang, of Copenhagen, in 1884 made known the results of experiments showing the presence of tubercular bacilli in milk from tuberculosed cows. Prior to this investigation, however, Klebs, Chauveau, and others showed that the milk and flesh of tuberculosed cows produced tubercular diseases in animals fed on these.

Klebs, Martin, Bang, Toussaint and others concur in stating that if milk from cows with tuberculosed udders is given for any lengthened period by the mouth or injected into the peritoneal cavity, tuberculosis will be developed in calves, hens, etc. (Woodhead). Prof. Hope, Medical Officer of Health for Manchester, recently ascertained by a special inquiry that 2·8 per cent. of samples of milk from cowsheds in Liverpool and 29·1 of samples taken at railway stations contained the infection.

Prof. Delépine found that of ninety-three samples of milk taken at random at railway stations in Manchester, 18 per cent. were tuberculosed. Prof. Delépine examined the cows at the farms from which the milk was got, and found, at fourteen of them, there were cows with hardened and presumably tuberculosed udders. (Parenthetically I would remark that veterinary inspectors find very great difficulty in diagnosing limited tubercle in cows' udders. The tuberculin test, while it indicates tubercle somewhere, cannot locate it.) We may now enquire into the proof that tuberculous milk causes human tubercular

disease. Experiments on animals have shown that it does, and analogy would lead us to believe that the same results should happen to individuals.

It was shown in the recent Tuberculosis Commission that tabes mesenterica—that form of tubercle mostly affecting children, who of course live much on milk—was on the increase, while tubercular diseases as a whole have diminished in recent years in Scotland. (The diagram I show indicates a considerable reduction of tuberculosis generally from 1855 to 1894.

Sir R. Thorne Thorne in a recent lecture stated that there had been a heavy increase in deaths under one year from tabes mesenterica. This increase had gone hand in hand with an increased consumption of milk.

I have taken the trouble to work out the figures for Scotland to ascertain how they compare with Sir Thorne Thorne's, who was dealing with England. It must be understood that since 1883 only has there been a uniform classification except for phthisis. In 1883, "hydrocephalus" became "tubercular meningitis," "scrofula," "other forms of tuberculosis."

Taking tabes mesenterica for *all ages* the results show as follows :—

	Males.	Females.
From 1855 to 1864, .	2·7	2·0
„ 1865 to 1874, .	3·4	2·5
„ 1875 to 1884, .	3·3	2·7
„ 1885 to 1894, .	2·4	2·0

The male rate slightly diminishes in forty years and the female rate not at all.

The figures for children under one year are stated in proportion to 1000 births.

	1855–59	60–64	65–69	70–74	75–79	80–84	85–89	90–94
Both sexes,	1·4	1·7	2·15	2·3	2·2	2·4	1·76	1·69

The figures for 1855-1859 are higher than 1890-1894, and this result agrees with Sir Thorne Thorne's observation.

I have, however, examined the figures representing the deaths under one year old, for every separate year, from 1883 to 1894, and find that there is a reduction during these years, although it is not a great one.

TABLE showing total deaths under 1 year from tabes mesenterica, total births and death-rate per 1000 births for Scotland.

Year.	Tabes under 1 year.	Births.	Deaths from Tabes Mesenterica to 1000 births.
1883	256	124,458	2·05
1884	264	129,157	2·02
1885	209	126,100	1·56
1886	263	127,890	2·05
1887	245	124,418	1·93
1888	197	123,269	1·59
1889	188	122,783	1·53
1890	225	121,526	1·85
1891	208	125,986	1·66
1892	195	125,043	1·55
1893	261	127,110	2·05
1894	170	124,367	1·36

Dr Woodhead states that from an analysis of 127 cases of tuberculosis in children, in 43 instances there was tubercular ulceration of the intestine. He also pointed out that in nearly 79 per cent. were the mesenteric glands affected, and he draws a most important inference from this that a large proportion of tubercular diseases in children begin with mesenteric tubercle. To put the matter very plainly before you the mesenteric glands act as filters on ingested tubercular milk, the filters become infected, and from their foci general tuberculosis may result.

If we wish to eradicate tuberculosis we must aim at those causes that lead to infantile tuberculosis. To infected milk we attribute tubercle of the abdominal organs and glands. The first thing to do so long as milch cows are allowed to remain in dairies, is to boil all milk used for children, and the next thing is, agitate for the removal of tuberculosed cows from dairies. When the agitation is widespread, legislation will follow for this end.

CLINICAL LECTURE II.

THE HÆMORRHAGES OF THE EARLY MONTHS OF PREGNANCY

Delivered in the Glasgow Maternity Hospital

By ROBERT JARDINE, M.D.
Physician to the Hospital

THE commonest cause of hæmorrhage in the early months of pregnancy is an abortion. The terms abortion and miscarriage are applied to the expulsion of the uterine contents before the fœtus has reached a viable age, *i.e.*, before the seventh month; from the seventh month onwards it is known as a premature labour. Strictly speaking, it is an abortion until the placenta is fully formed, *i.e.*, until the end of the third month; from that time onwards until the seventh month it is a miscarriage. To the lay mind the word abortion is usually associated with criminal practices, so it is well to avoid using it to patients. The terms in common use are miscarriage and mishap. So much depends upon the proper treatment of abortions, that I intend discussing the subject fully. I wish to impress upon you that an abortion is not a slight affair which can be ignored with impunity. The recent danger is comparatively slight, but the remote consequences may be very serious, and it is against them you have specially to guard. If all abortions were properly treated, gynæcological work would be materially lessened. A large percentage of such cases date the beginning of mischief from an abortion.

Thirty-seven per cent. of child-bearing women are said to abort at least once before the age of thirty-one, and from that time onwards abortions are much more common. Some authorities assert that one-fifth of all pregnancies are interrupted before full time.

Time of Occurrence.—It usually corresponds with the time a menstrual period would have occurred had she not been pregnant. When pregnancy does not exist, you know how the uterus becomes hyperæmic at each menstrual period, and this tendency continues during pregnancy, so you can easily understand why an abortion is apt to occur at these times, especially during the early months before the placenta has been fully

formed and the deciduæ become atrophied. The third month is probably the one at which most occur.

Primiparæ are not so liable to abortions as multiparæ, but a good many occur among them.

Causes.—These may be taken up under four headings, viz. —Fœtal, Maternal, Paternal, and Accidental.

I. *Fœtal.*—(1) Diseases of the chorion, amnion, placenta or cord; (2) sudden loss of Liq. amnii, which may be caused by an accident or intentionally by the passage of an instrument; (3) anything which causes the death of the ovum.

II. *Maternal.*—(1) Syphilis. This is the commonest cause of all among a certain class. It is apt to cause repeated abortions. (2) Diseases of the uterus, especially endometritis which affects the deciduæ; (3) displacement of the uterus; (4) tumours of the uterus or other pelvic organs; (5) serious constitutional disease of any of the systems of the body; (6) febrile conditions from any of the specific fevers; (7) poisons, such as phosphorus or arsenic.

III. *Paternal.*—(1) The commonest cause on the part of the father is undoubtedly syphilis, and as the ovum is syphilitic, it becomes a fœtal cause. The mother may become affected, so the disease may act in two ways; (2) extreme youth or age of the father is also a cause.

IV. *Accidental.*—(1) Physical. Direct violence from a blow, fall or injury of any kind. In some cases a very slight accident may cause it, while in others the woman may be very severely injured, *e.g.*, by kicks on the abdomen or severe crushing, and yet the pregnancy not be interfered with. Indirect violence from over exertion, *e.g.*, from riding on horseback, on a cycle, in a cab or railway train, dancing, playing tennis, etc., and among the working-classes from overwork such as lifting heavy weights or overstretching in hanging up clothes, etc. A very severe fit of coughing, sneezing, or vomiting may also cause it. Excesses in eating, drinking, or coitus are also given as causes. (2) Mental. Any mental shock, such as the sight of an accident, sudden bad news, etc., or violent indulgence of the passions, may act as an indirect cause through the nervous system. The shock of a serious operation may cause it. Of late years abdominal operations during pregnancy have become fairly common. In some, abortions have occurred, but in many cases the pregnancy has gone on to full time.

Procured Abortion.

There are a few conditions under which the procuring of an abortion may become justifiable, *e.g.*, in patients suffering from very bad chorea gravidarum, bad heart disease, bad kidney disease, uncontrollable vomiting, and an incarcerated retroflexed uterus which cannot be replaced.

You should never undertake the operation without having a consultation. Occasionally an abortion is unwittingly procured by the passage of a sound into the uterus; but it is possible to pass a sound during the first three months, and even later, without causing any mischief, provided the ovum is not punctured. I recently delivered a case of placenta prævia at the sixth month, where a dressed Playfair's probe dipped in carbolic acid had been passed into the uterus just before she quickened. She had been under treatment for endometritis before becoming pregnant, and her attendant had been misled as to her condition.

You are aware that the procuring of an abortion, except in such cases as I have indicated, is a criminal offence. You will probably not be very long in practice before you will be barefacedly asked to commit this crime, and possibly be offered a large fee as an inducement. One cannot help feeling sorry for unmarried girls who have been betrayed, and can forgive them making such a request, but in my experience it is married women who do not wish to have more children who are the worst sinners. The methods of prevention of conception, and of getting rid of the ovum if conception has occurred, are now unblushingly discussed by women, and not by any means women of the poorer classes. This is probably the result of reading the new style of novel which is the very reverse of its predecessor, in which, as Kipling has it—

> "We asked no social questions—we pumped no hidden shame—
> We never talked obstetrics when the little stranger came."

The barefaced indecent advertisements which disgrace the pages of so many secular and even, I am sorry to say, religious papers, have much to answer for. They should be put down with a strong hand, but unfortunately the law seems powerless to deal with them.

The question of the prevention of conception will come before you from time to time. Authorities are practically

silent on this point. For my own part, I always refuse to give any advice in this matter, except to advise cessation of intercourse.

Before considering the symptoms, etc., let us look at the conditions we have in the uterus in the early months. At conception the uterine mucous membrane becomes thickened, forming the decidua vera; at the point where the ovum becomes implanted this thickening is specially marked, forming the decidua serotina where the placenta is to form, and growing up round the ovum we have the decidua reflexa. As the ovum grows the decidua reflexa gets pushed out against the decidua vera, and they blend and become thinned out so that at the end of pregnancy they form a very thin layer over the chorion. To completely empty the uterus, all within the spongy layer of the deciduæ vera and serotina must come away. Before the placenta is formed the deciduæ vera, reflexa and serotina with the enclosed ovum in its membranes must come away. It is important to remember this, because you will occasionally find the ovum expelled and nothing else, or the ovum and decidua reflexa, leaving the deciduæ vera and serotina behind. I had a case a few days ago where I found a small sac completely covered with villi had been expelled. The patient was sure all had come away, but I knew the most important part was still in the uterus and took steps to clear it out. I got away the complete lining of the uterus. If this had been left the result might have been very serious. I have a number of specimens of early abortions here which illustrate beautifully that the ovum itself is only a small part of what has to be removed in order to thoroughly clear out the uterus. When the placenta is fully formed, it and the membranes are the important part as the deciduae are then thinned out.

During the first two months especially, the deciduæ are very vascular and, therefore, liable to hæmorrhage. The hæmorrhage may be behind or into the deciduæ, between the reflexa and the ovum or into the ovum itself. When blood is once poured out, it acts as a foreign body and causes uterine contractions which will cause more separation and more bleeding. After the placenta has formed, the hæmorrhage will arise from separation of some part of it. You can easily understand how any disease of the endometrium will predispose to an abortion, as hæmorrhage is more apt to occur. In the vast majority of

abortions, just as in the vast majority of cases of accidental hæmorrhage, endometritis will be found to have been present before conception.

Implantation of the placenta in the lower uterine segment predisposes to abortion. These are cases of placenta prævia if they go on until the sixth month or later. We shall deal with them in a future lecture. I believe a number of these cases abort in the early months. In one case of an abortion at the end of the third month, I was able to convince myself that the placenta was attached over the os. You can easily understand why such a case would be liable to abort.

Varieties of Abortions.--Abortions are usually divided into two main divisions—threatened and inevitable. The latter may again be sub-divided into complete, incomplete, and missed.

Signs and Symptoms.—There may be a few premonitory symptoms, such as a feeling of faintness and vomiting, but these are of little consequence. If it is a very early abortion, she may think it is merely a prolonged and profuse menstrual period which has been delayed for a few days.

Pain and hæmorrhage are the cardinal indications. The pain may be felt some little time before the hæmorrhage becomes apparent, but the hæmorrhage may appear first. The pain is felt in the pelvis and is usually intermittent in character, very like early labour pains or the pains of dysmenorrhœa. In a short time you have the hæmorrhage and pain together. The hæmorrhage may be intermittent, recurring at intervals of several hours, or even days, or it may become continuous like a menstrual flow. There may be clots expelled, or in some cases only a free serous flow at first, the clots being retained in utero. As a rule the bleeding is not alarmingly profuse, but it may continue for a long time and weaken the patient markedly. The pain in some cases is not very severe, while in others the woman will complain that it is as bad or worse than with a full-time labour.

As soon as the uterus is thoroughly emptied, the pain will cease and the hæmorrhage also; but there will still be some lochial discharge as after a full-time labour, but not as profuse or prolonged.

Threatened Abortion.—The pains are slight and irregular, with a considerable time between them. The hæmorrhage will

not be great, and on examination the os will be found closed or only very slightly dilated.

Inevitable Abortion.—The pains are stronger and more regular, the bleeding much more profuse, and on examination the os will usually be found to be dilating. The ovum will often be felt beginning to protrude. The pains will become stronger and at shorter intervals, until the uterine contents are expelled in part or entire. If a part only is expelled, it will be an incomplete abortion; but if the whole comes away, it will be a complete one.

Incomplete Abortion.—In an incomplete abortion in the early stage of pregnancy the ovum alone may come away, leaving the deciduæ behind; or the decidua reflexa may come with it, leaving the vera and serotina behind. After the placenta has formed, it and the membranes may be retained in whole or in part. The portion left behind may come away entire or in pieces, and until it is all away there will be considerable discharge. If sepsis occurs, the woman will run considerable risk at the time, and she will be almost sure to suffer from subsequent inflammatory disease of the Fallopian tubes, ovaries, pelvic connective tissue or endometrium. Sometimes a small piece of placenta remains firmly attached and forms a so-called placental polypus, which consists of a mass of connective tissue formed from an organised blood clot in and around the bit of placenta. Compressed and degenerated chorionic villi can be detected in it with the microscope. Hæmorrhages will occur so long as this remains in utero.

Missed Abortion.—In some cases the ovum perishes but is not expelled at once. It may be retained in utero for months. I have seen one which was retained for five months. In the famous case of Kitson *v.* Playfair, a portion of a blighted ovum was said to have been retained sixteen months. At the time the ovum perishes you will have an abortion threatened, but this passes off without the uterus expelling its contents. The symptoms of pregnancy disappear except the amenorrhœa. The uterus does not increase in size as a rule, except in cases of fleshy moles into which fresh hæmorrhages occur. The increase in size will not correspond at all with the supposed time of pregnancy. The uterine contents will ultimately be expelled with the symptoms of an abortion. The ovum may be shrivelled up or in the form of a fleshy mole. A shrivelled

or blighted ovum is not infrequently expelled at full time along with a fully-developed child. I have seen six or eight such cases. I have here a fine specimen of a fleshy mole. You see it is fleshy-looking, hence the name. On opening it up we find a small cavity lined with a smooth glistening membrane. This is the remains of the ammotic cavity. There is absolutely no trace of a fœtus. It has been absorbed. In some cases you will find traces of a fœtus. Under the microscope the mass will be found to consist of organised blood clot, with degenerated chorionic villi in it.

Diagnosis of an Abortion.

The first thing we have to satisfy ourselves about is that the woman is really pregnant, and, if so, that it is an ordinary and not an extra-uterine pregnancy. I have already referred to this in my first lecture. Having determined this point, the next thing we have to decide is whether it is a threatened or an inevitable abortion, because our line of treatment in the former will be to prevent, if possible, while in the inevitable it will be to hasten the emptying of the uterus.

If the bleeding is small in amount, the pains not very strong nor frequent, and the os closed or only slightly opened, we may look upon it as merely threatened. On the other hand, if the pains are strong and regular, the bleeding copious, and the os dilated so that the ovum can be felt protruding, we may be sure it is inevitable.

In very many cases we only see the patient after a mass has been expelled, and we now have to decide whether it is complete or incomplete. If the mass has not been destroyed, by examining it carefully we may be able to decide that the uterus is completely emptied. If you get a complete specimen like these before you there will be no difficulty, but unfortunately you do not often see what has come away. You will then have to judge by making an examination. If the finger can be passed into the uterine cavity you will be able to feel if there is anything retained, but without $CHCl_3$ this is not often practicable. If the bleeding and pains have ceased on the expulsion of the mass, the chances are that the uterus is empty; but if the discharge of blood is still going on freely, or if it recurs in a day or two, there is sure to be something retained.

In an incomplete abortion the discharge continues, and if it has stopped it recurs at intervals. If you are fortunate enough to see what has been expelled, you will find it is only a portion of the product of conception. In the first two months it may only be the ovum, or the ovum and decidua reflexa. From the third month it may be the small fœtus, or it and the membranes alone. The entire placenta and membranes may be left behind, or the placenta alone or portions of each.

An examination without $CHCl_3$ may reveal that there is something still in the uterus, but it is much better to give $CHCl_3$ and then you can treat it at once as I shall shortly indicate.

Quite recently I have had to deal with three cases of incomplete abortion which may be taken as types. In the first I was called to see a woman as her own medical attendant was engaged. She was supposed to have aborted a few days before. The bleeding had recurred, but it had ceased when I saw her. A vaginal examination revealed nothing, but I felt sure there was still something retained in utero. I advised an examination under $CHCl_3$, and removed with a flushing curette a piece of placenta about the size of a large bean. There was no more hæmorrhage and she made an excellent recovery. The second case had been under treatment for a month with recurring hæmorrhages. She had been assured that it had all come away. I was called hurriedly one night to see her as she was bleeding very profusely. I removed a complete placenta from the uterus. It was very septic. She made a good recovery. That she did not die of sepsis was a marvel. The third case was one of my own. When I first saw her the hæmorrhage was only slight and I tried to prevent the abortion, but in a few hours the ovum was expelled but the whole of the deciduæ were left behind. An examination revealed that they were beginning to separate. As there was no hæmorrhage I waited a few hours before using the curette, and the complete cast was expelled.

Missed Abortion.—The diagnosis may be very difficult. The signs and symptoms of pregnancy will have disappeared except the amenorrhœa. If you have a history of pregnancy with a supposed abortion some time before followed with amenorrhœa and you find that the uterus is not nearly the size it should be, you should suspect it is a missed abortion, but you must always

bear in mind that it is possible that she may have had a complete abortion and have become pregnant a second time before menstruating. If you have any doubt wait for a few weeks, and if it is a normal pregnancy the increase in the size of the uterus will be steady, but if there is no increase you can definitely decide that it is a missed abortion. To make absolutely sure, dilate the cervix and explore the uterus and treat as I shall shortly indicate.

Treatment.

The treatment differs according to whether it is threatened or inevitable. In the former the patient must be kept quiet in bed. If the bowels are loaded they should be cleared out with a gentle laxative or better by means of an enema of soap and water. A drastic purgative must be avoided. The food must be light and non-stimulating. The medicinal treatment aims at quieting uterine action. Opium in one form or other is, I think, the best drug. The Ext. Viburnum Prunifolium is highly spoken of as a uterine sedative. I have used it with good results. Hydrastis Canadensis is also said to be useful but I have had no experience of it. Small doses of ergot are also highly recommended by some, but condemned by others. My experience of ergot is that it is very uncertain in its action. This is probably due to the fact that the preparations used are often not freshly made. On the whole I am inclined to think opium is the best drug to use.

The patient must be kept quiet in bed for a week or ten days. If there is any displacement of the uterus it should be rectified and kept in position by a pessary. You must warn the patient to be specially careful when her next period or two are due. She should rest then. If you find there is a syphilitic taint, put her on mercury and iodide of potash and keep her on it until full time. In cases where abortions not due to syphilis have been frequent, I have got very good results from chlorate of potash, 10 grs. thrice daily all through the pregnancy.

Treatment of Inevitable Abortion.—In spite of your treatment, some cases which appear to be only threatened will become inevitable. Your line of treatment must then be changed. In an inevitable abortion you must try to get the uterus emptied as soon as possible. There are several methods

adopted. It is a very common practice to give ergot in full doses in the hopes that the uterus will completely empty itself. This is a very uncertain method, and I do not recommend it.

In a case where the os is dilated sufficiently, remove the uterine contents with your finger. You may be able to express it bimanually. Ovum forceps may be used, but your finger is the best instrument. If you cannot get it all away use the flushing curette. Douche out the uterus with an antiseptic. The hæmorrhage usually ceases on douching, but in rare cases it continues. The uterine cavity should then be plugged with an antiseptic or aseptic plug. Iodoform gauze makes the best antiseptic plug. The plug should be removed within twelve hours. After clearing out the uterus, ergot should be given for a day or two.

In a case where the discharge is free and the os not sufficiently dilated to admit of clearing out the uterus, your best plan is to thoroughly plug the vagina after douching it out. Iodoform gauze makes the best plug, but aseptic lint or a kite-tailed plug of pledgets of aseptic wool answer the purpose equally well. Full doses of ergot may be given. The plug should be removed within twelve hours. The ovum will often be found lying on the top of the plug on its removal. If the os is not sufficiently dilated to clear out the uterus with your finger or curette you may plug again.

In some cases it may be desirable to clear the uterus at once. Dilatation can be effected by means of dilators, such as Hegar's—the metal ones are the best. Tents are advised, but it is very difficult to make sure that tents are aseptic, and if not, the risk is very great. For that reason I cannot recommend the use of tents.

Incomplete Abortion.—Very often ergot is given in the hopes that the retained portion will be expelled, but this is bad treatment. The uterus should be thoroughly curetted with a dull flushing curette. It may be necessary to dilate the cervix to do this. With the patient under $CHCl_3$ this can easily be done with Hegar's or some other form of dilator. Tents are dangerous. As a rule the bleeding ceases on douching, but I have seen one case in which it did not. The case was that of a young unmarried girl admitted last summer. She was bleeding freely on account of an incomplete abortion. She was an intelligent girl, but we could not get a straightforward

history from her. I strongly suspected it was a procured abortion. Under $CHCl_3$ I dilated the cervix with Hegar's dilators, and thoroughly curetted the uterus with a flushing curette. In spite of a douche at 120° the bleeding remained profuse. It was checked completely by an intra-uterine plug of Iodoform gauze. She made an excellent recovery.

Treatment of Missed Abortion.—If the os is dilated sufficiently, clear out the uterus with your finger or curette. In a case where there is no attempt on the part of nature to expel it, you should dilate with Hegar's dilators, and separate the mass with your finger and remove it. The cavity should be thoroughly cleared with the flushing curette. Ergot and iron should be given, and you would probably have to treat the endometritis for some time.

In all cases where any examination or operative interference is necessary, the strictest antiseptic and aseptic precautions must be taken. The after-treatment in all is the same as after a full-time labour. Douching as a routine is not necessary unless there is sepsis, and then it must be done carefully and thoroughly. The patient should be kept in bed for at least a week. You will find this is a difficult task, but you should insist on it. Ergot is usually given to hasten involution.

If the abortion is a complete one, the usual after-treatment is all that is required.

Prophylactic Treatment.—I have left this to the end, because, as a rule, we are not called upon to use it until she has had at least one abortion. The best prophylactic treatment in many cases is to properly treat abortions so that the uterus will return to a healthy condition, *i.e.*, to thoroughly clear it out and keep the patient quiet until involution has occurred. She should not resume intercourse until involution is complete, and the endometrium is in a healthy condition. If syphilis is present, she should be put on antisyphilitic remedies. The husband should also be treated, but I must warn you that you must be extremely careful in dealing with cases of this kind, as you may very easily upset the peace of a home.

In cases of endometritis, intercourse should be prohibited until the condition is cured. I have seen many cases of abortion in patients who became pregnant before their endometritis was completely cured. If there is anæmia or other

constitutional weakness present, suitable treatment must be adopted. In cases of habitual abortion from degeneration of the placenta, chlorate of potash is a most useful drug. Give it continuously during the pregnancy. If the uterus is displaced, replace it and put in a pessary to support it. Always warn your patients against over-exertion, especially at times corresponding with the menstrual periods, and more especially at the time corresponding with former abortions.

Digest

THE PARASITE OF CANCER

By WILLIAM RUSSELL, M.D., F.R.C.P.Ed.,
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RECENT papers have re-awakened interest in this country in the question of the parasitic organism of cancer, and the time seems opportune for a review of the question. It is not my intention here to argue in support of the infective nature of cancer, but I may state that increasing clinical and pathological experience only deepens my conviction of its infectivity. I am fully aware that many minds are ranged on the other side; they include some of my personal friends, but I console myself by remembering that it took some of my friends almost a decade to accept the bacillus tuberculosis as the etiological factor in tubercle. Accepting as I do the doctrine of infectivity my present purpose is confined to the question of the infective element.

Up to 1890 Albarran, Darier, Thoma, Wickham, and Sjöbring had described structures in the cells of cancer which they believed to be parasitic, and all of them with the exception of Thoma regarded the parasite as belonging to the Protozoa.

In 1890 I published a paper in which I described what I believed to be a parasitic organism in cancer. The organism was described both in an extra-cellular and an intra-cellular form. They were held by me to be Blastomycetes, and I provisionally called them "Fuchsin Bodies." The subject was taken up with considerable ardour, and it was found that bodies similar in appearance to the *extra-cellular* forms described occurred in morbid conditions other than cancer.

Some of the observations by others were correct, some were wrong, as sufficient allowance was not always made for the care with which I had excluded the possibility of the extra-cellular forms being some of the things they were said to be. Still the fact remained that identical bodies were found in other morbid conditions, and this fact became a stumbling block. After this other work appeared which dealt with the *intra-cellular* structures in cancer cells, and in which it was attempted to differentiate the intra-cellular appearances into organisms, degenerations of cell protoplasm, or degenerations of cell inclusions not parasitic. The organism was regarded by these observers as a sporozoon, or at all events an amæboid parasite. A considerable array of observers, including Bergonzini, Klein, Raum, Hauser, Shattock and Ballance, Goldmann, Rossi, Touton, Mantegazza, Pelagatti, &c., contended that the appearances described were the result of degeneration of one kind or another, or of something else. The variety of explanation has been great, and it is not going too far to say that the effect was that the current view has been that all work contending for the parasitic nature of the appearances was either wrong or wrongly interpreted. When Ruffer brought forward his work at the Annual Meeting of the British Medical Association I stated that I was familiar with all the intra-cellular appearances, and that his preparations were so beautiful that it was vain to continue the subject from the morphological standpoint as nothing more could be made of it; that the two opinions would continue to be held, namely (1) that they were parasites, and (2) that they were merely degenerations. Experimental work by those whose circumstances permitted them to pursue the subject could alone settle who was right.

Within the past few years experimental work has been gradually determining, as it seems to me, this question. It is to investigators in Italy that we are indebted for its elucidation, and it is mainly with the view of bringing the Italian work somewhat fully before the profession in Britain that this paper is written.

The honour and the credit of the experimental work belongs, in the first place, to Professor Francesco Sanfelice, Director of the Institute of Hygiene in the Royal University, Cagliari. Before entering on an account of his work, it is necessary to state that

when I published my paper the dictum of pathologists was that the blastomycetes were not pathogenic, and this authoritative dictum ruled men's minds as dicta of the kind usually do.

Sanfelice's Discovery of a Pathogenic Blastomyces.

Sanfelice's attention seems to have been directed to cancer by what we call chance. He was engaged investigating the morphological and biological characters of blastomycetes when he found that one of these was pathogenic, and was interesting, not from this fact alone, but from the further fact of its morphological resemblances to the bodies which had been described as cancer coccidia. He then, apparently, looked more fully into the literature of pathogenic blastomycetes, and from this it appears that Neumayer and Raum had both experimentally inoculated animals with pure cultures but without results of importance. Busse had described a case diagnosed as sarcoma of the tibia, in which numerous cells were found, which Löffler cultivated and pronounced to be blastomycetes. Experimental inoculation with these only proved that the parasite was capable of reproduction in the animal body. Mafucci and Sirleo described a blastomyces obtained from a guinea-pig with which they were able to inoculate other guinea-pigs.

This seems to have been the position as regards pathogenic blastomycetes, when Sanfelice had begun the investigations to which special reference is to be made.

The special organism with which Sanfelice experimented he has called the *saccharomyces neoformaus*. Inoculation of guinea-pigs with it showed that wherever inoculation was performed the result was a general infection of the animal with the formation of tumours, consisting partly of masses of the parasite and partly of proliferation of the cells of the part. The infection spread by the lymph and blood channels and did not cause inflammation. The animals usually died within a month; and he noted that in the tissues the parasite had a somewhat different appearance to what it had in cultures. The appearances of this parasite in the tissues of guinea-pigs had a great resemblance to the bodies found in human malignant growths by many observers. Most of these authors believed these bodies to be coccidia, and it was by Russell alone that the bodies were believed to be blastomycetes. In a further paper he

continues the account of experimental inoculation of other animals. In mice, inoculation led to a rapid infection with great multiplication of the parasite. In white rats the process was slower, the animals dying after one and a half to two months, and with more reaction on the part of the tissues. In rabbits, only two out of twelve inoculated died, and in the fatal cases the parasites were fewer in number, but there was more proliferation of the tissue elements than in the other animals. Out of thirty dogs inoculated, only two developed a tumour at the point of inoculation and metastasis in internal organs. One of these dogs was killed after four months, the other died after ten months. The pathological changes in the first dog consisted in the development of a nodular tumour in the mammary gland where the inoculation had been made, with enlargement of neighbouring lymph glands. The changes were like those of a sarcoma. Very few parasites were found, and no cultures could be obtained from any of the tissues. In the second dog the growths were different, but I have so far failed to find an account of the anatomical changes present in it. In fowls the parasite presented a different appearance to the appearance in the other animals.

The Morphological Characters presented by the Blastomycetes when Inoculated into Animals.

In a paper dated September 1897, on the "Experimental Production of Russell's Fuchsin Bodies," Sanfelice says that until that time among the animals he had inoculated with *saccharomyces neoformaus* it was only in dogs that the blastomyces appeared in the typical forms as described by Russell under the name of "fuchsin bodies." Russell described them as certain structures which he could almost always demonstrate in carcinomata. They were almost spherical, 4-12 mm. in diameter, homogeneous, and without a trace of structure. They lay almost always in groups of 3-20 elements; some of them were bounded by a thin rim of cell protoplasm, while the majority lay in a clear area in a kind of vacuole. They were met with either in the cancer cells or in the stroma. Russell believed these to be parasites, and classed them under the blastomycetes or sprouting fungi.

Sanfelice goes on to say that since the previous year he

has been inoculating various animals with pure cultures of the *saccharomyces neoformans*, and had noted that in certain cats which died after some months the blastomycetes inside the tissues took the typical forms of Russell's bodies, and in view of the appearance of the works of investigators who denied that Russell's bodies were blastomycetes he proceeds to report on the manner in which the parasites appear in these particular animals.

He contends that it is only by experiment that a positive result can be arrived at, and it is owing to the fact that observers have depended on morphological features and staining reactions that the majority of authors have arrived at erroneous results.

When he ascertained that after injection of pure cultures of *saccharomyces neoformans* in cats, typical Russell's bodies appeared in the tissues, he investigated the tissues of normal cats, but in no case found Russell's bodies. After inoculation with *saccharomyces neoformans*, the fuchsin bodies were invariably found, and moreover presenting the same form and arrangement, and with the same reaction to colouring material as the bodies which Russell and others had described as occurring in malignant tumours.

Sanfelice inoculated ten cats of different ages in the peritoneal cavity, some once, others oftener. When the cats died, on an average after three months, numerous sections were made of all organs. The pieces of the tissues of normal cats were fixed in the same way as those of the inoculated animals. In this way he demonstrated the fact that Russell's fuchsin bodies appeared in the tissues after the inoculation of cats with *saccharomyces neoformans*, and he describes the structure and arrangement and properties of the bodies he found so as to prove their identity with the bodies regarded by Russell as blastomycetes, and by his opponents as products of cell degeneration.

In the inoculated cats the fuchsin bodies appeared in greatest number in the lymph glands of the mesentery, in the spleen, and in the bone marrow. They were easily recognised, being perfectly round in form, and in size varying from that of a micrococcus to that of a leucocyte. As regards structure, some of the bodies show a differentiation of the chromatic substance, while others take on the stain homogeneously, with

more or less intensity. The bodies with differentiated chromatic substance possess either a kind of circle or an intensely coloured membrane with a less intensely coloured central part, or they show a deeply coloured centre surrounded by a circle only faintly coloured, or not coloured at all, and varying in breadth. The homogeneously coloured forms take on a more or less deep colour.

In many of the parasites multiplication by *budding* may be seen, in the same way as is seen in artificial cultures. The buds grow from the smaller elements as well as from the larger, and may or may not remain attached until they attain the full size.

In the tissues of cats the blastomycetes are found either lying free or inside the cells. The free forms lie between newly formed cell elements, and usually in groups, seldom singly. The number of parasites in one group varies. Sanfelice has counted as many as thirty in one group. Sometimes these are so closely clustered as to present a mulberry appearance, sometimes they lie separated from each other, and, moreover, at such equal distances that they have the appearance as if some cement substance kept them at equal distances and prevented direct contact of the deeply-coloured substances. Occasionally one can see quite distinctly that this apparent cement substance is formed from the circles or hyaline membranes, which by touching each other conceal the outlines of their peripheries. In some groups of blastomycetes the hyaline membranes are very apparent, and their borders are distinctly seen.

The endo-cellular parasites are usually much smaller than the free forms. If there are only one or two in a cell they are moderately large ; if many, they are small. The number of enclosed parasites varies, as do the free forms, and they present the same appearances. According to the position in which the cell containing the parasites is seen by the observer, the nucleus appears either pushed to one side, or in the centre of the cell, surrounded by parasites. It often happens that small parasites in considerable numbers are found lying close together in a ground-substance, without any nucleus being visible. It is possible that in such cases the nucleus is lying under the parasites, so that the eye of the observer cannot detect it. Another feature is the fact that they are found in the neighbourhood o

young, newly-formed cells, and do not appear in the parts where the cells are undergoing degeneration. He is unable at present to say why the parasites should appear in the form of fuchsin bodies only occasionally in dogs, though constantly in cats. He concludes by stating that this communication is intended to prove: (1) That all authors who contend that Russell's fuchsin bodies are not blastomycetes, have not hitherto brought forward experimental proof that they are cellular degenerations.

(2) That through the inoculation of cats with pure cultures of saccharomyces neoformans, the typical bodies are produced which have been described by Russell and others, as occurring in malignant tumours in man, and in certain chronic inflammatory processes.

(3) That these fuchsin bodies are not found in normal cats, but only appear in these animals when they are inoculated with pure cultures of saccharomyces neoformans, or with pieces from the tissues of cats, containing the typical forms of Russell's bodies.

A coloured plate, illustrating the various forms of the parasite, is appended to this paper.

It may simplify this question to say here that Sanfelice states that the pathogenic blastomycetes, hitherto cultivated, closely resemble one another on artificial media and in morphological appearances, while at the same time their pathogenic action varies widely.

The experimental production of epithelial tumours and metastatic epithelial growths.

Having settled the morphological facts, the next still more interesting point was to ascertain whether the injection of these blastomycetes into animals susceptible to malignant tumours would bring about the formation of neoplasms similar to the malignant tumours observed in man. Sanfelice approached the solution of this problem by passing the blastomyces with which he was experimenting through a number of dogs, that is from dog to dog. By this method he arrived at positive results in two cases. In one of these the dog had been inoculated in the two posterior nipples, with the blastomyces which had been passed through several dogs. After a slight

inflammatory reaction at the site of inoculation the nipples remained apparently normal until about a month after the operation, when signs of a neoplastic process became evident. The animal died ten months later, with marked cachexia, tumours in both teats, showing retraction of the nipples and tacking down of the skin, and secondary growths in the inguinal and abdominal lymphatic glands. All these showed the typical structure of adeno-carcinoma. Sanfelice's colleagues Biondi and Carboni confirmed this opinion. Numerous illustrations of the naked eye and microscopical appearances are appended to this communication. No parasites were observed in the centre of the primary tumours. A few were observed in the peripheral part of the primary tumour, and in the metastases in the glands. He could obtain no cultures from any of these growths: the explanation he offers of this is that when the parasite has so grown accustomed to its surroundings as to take on the typical characteristics of Russell's bodies, and to become capable of producing malignant tumours, from that time it becomes incapable of growing in artificial media. (He evidently means by this the ordinary media on which he had grown his saccharomyces neoformans). In order to be grown artificially the parasite must occur in the form in which it occurs in guinea-pigs, etc., that is in the form usually found in infections running a rapid course, and seldom in those running a more prolonged course. If blastomycetes are isolated from malignant growths of man or animals he holds that they must have been present in the growth in both forms.

The foregoing positive result obtained by Sanfelice is so important that the other cases may also be given. A dog was inoculated in both testicles. After one and a half months, swelling of the testicles and penis became evident and gradually progressed. The animal died after five months from accidental poisoning. The animal had been seen during life by various authorities, among them Dr Marino-Zuco of Rome, who agreed that the growths were of a malignant nature. The examination of the parts showed adeno-carcinoma of the testicles, with secondary growths in the neighbourhood of the penis and glans. The parasites were much more numerous than in the previous case, this being, he considers, due to the earlier stage at which the animal died. He explains that the longer the parasite is present in the tissues the fewer they

become. They presented the typical features of Russell's bodies, and, as in the previous case, no cultures could be obtained from the tumours.

Further inoculation experiments are given, but these need not be given in detail. It is sufficient to state that a few positive results were obtained by inoculating dogs from the new growth in one of the cases referred to above.

Inoculation into the Circulation and Abdominal Cavity of dogs and cats.—Inoculation of dogs in the jugular vein led in the course of one, to one and a half months to connective tissue changes in which the parasite was present in small numbers and in its cultivable form. It was by intraperitoneal injection from dog to dog that he obtained the parasite which produced the epithelial growths already referred to. In the case of cats, he found that the saccharomyces neoformans inoculated into the abdominal cavity or veins brought about the same changes as he had observed in the bodies of dogs inoculated in the same way. In the case of cats, he confirmed his opinion that when the parasite had been long enough in the body to assume the typical forms of Russell's fuchsin bodies they were no longer cultivable in artificial media. If, however, the cats were killed soon after inoculation, cultures could be obtained, the parasite then presenting the forms which occurred in guinea-pigs and rabbits where the infection ran a more acute course. One of the conclusions he draws from his experimental work with the saccharomyces neoformans is that it appears in the tissues of animals in two forms. In one form it possesses a capsule and is cultivable in artificial media. In the other it has no capsule, is identical with the fuchsin bodies of Russell, and cannot be cultivated in artificial media. This second form is only observed in the organism when the parasite has lived in it for some time.

Roncali's Histological Contribution.

Professor Roncali of Rome has taken a leading part in the appreciation of Sanfelice's work and has published important papers on the histological appearances in some malignant tumours in man. He was attracted by the fact that in a case of adeno-carcinoma of the ovary there were appearances identical with those described by Sanfelice, and

he came to the conclusion that they were due to the same cause, the presence of a parasitic blastomyces. He also noted the resemblance between the appearances in his case and those described in cancer and regarded by some authors as parasitic. He acknowledges, with scientific justice and frank generosity, that all authors had seen real parasites, but they had erred in assigning them a place in the animal kingdom. He thinks they were led by a false prejudice, wishing to see Sporozoa. This circumstance had proved, he thinks, the inexhaustible source of all the errors made. He records three cases, two of adeno-carcinoma of the ovary and one of adeno-carcinoma of the colon with secondary involvement of the great omentum and mesentery. The detailed description of these cases it is unnecessary to reproduce. In all he found the same appearances, and he has no doubt as to their nature. He describes and figures the parasite both as extra-cellular and intra-cellular. From one of his cases he obtained cultures of blastomycetes. Inoculation of guinea-pigs with these cultures caused death of the animal, and the production in many of the organs of little whitish nodules. These were of the nature of granulomata, only with more of the characters of new growth than of inflammatory products. The nodules showed many parasites, young and degenerated, and Roncali found them to be identical with a blastomyces isolated by him from an epithelioma of the tongue. Roncali undertook, and records, a large series of experiments to prove that the parasites had not reached the tissues from the air after removal from the body. He showed by these that dead tissue, whether of normal organs or of tumours, was not suitable for promoting the growth of blastomycetes, and that blastomycetes show no preference for the tissue of malignant growths. Having disposed of the question of contamination, he then discusses the question of the etiological factor in human neoplasms, and his conclusion is that the genetic connection between the blastomycetes and malignant tumours is proved.

Work of other observers

Busse cultivated a blastomyces from a sarcoma, as has been already referred to. *Kahane* got pure cultures of a blastomyces from a cancer of the uterus. *Mafucci* and *Sirleo* have a paper

on the blastomycetes as the cause of origin of malignant tumours, but their results are mainly negative, while not denying the possibility of a connection. An important case is recorded by *Corselli* and *Frisco* of sarcoma of the mesenteric glands, from which they were able to isolate blastomycetes which produced similar growths in guinea-pigs, rabbits, and dogs. They got pure cultures of blastomycetes in the patient's life-time, and after death from fluid from the abdominal and thoracic cavities. *Curtis* had a case, referred to by Sanfelice and Roncali, of a myxomatous tumour in a man, from which he obtained cultures of blastomycetes, and by inoculation produced a tumour in a rabbit.

Conclusions

To anyone going carefully through Sanfelice's work there is only one opinion possible, and that is that it is a very careful and beautiful piece of investigation and research. To me it points in only one direction. The links in the chain of evidence are simple and strong, and may be thus summarised. Investigating blastomycetes he finds appearances similar to those described as occurring in cancer both inside and outside the cells. Working on these lines he familiarises himself with the appearances presented by the parasite in the tissues and organs of different animals. He finds that in different animals the pathogenic effect varies from a somewhat rapid infection with great proliferation of the parasite down to a much less acute infection. In dogs, by inoculating them into the peritoneal cavity, he recovers the parasite from the lymph glands and passes them through another dog, and so on. Having in this way modified the parasite by the chemico-vital influences in the dog's body, he inoculates the mammæ and the testicles of dogs with the modified organism, and finds that it produces epithelial growths with metastases.

The success of others in cultivating blastomycetes from tumours, mainly malignant, adds confirmation to Sanfelice's results. Roncali is one of these, but his confirmation is largely from the histological standpoint, and he was avowedly greatly aided in his observations by his acquaintance with the appearances in the tissues produced by inoculation with the saccharomyces neoformans as followed by Sanfelice.

I have avoided reference to controversial questions, although Sanfelice and Roncali somewhat warmly criticise the work of those who considered the structures described as degenerations. Those interested in that negative aspect of the problem will find it fully referred to in various of the papers mentioned below.

It seems almost needless to add that there remains abundant work to be done in this important and attractive field. One is pleased to see that a British worker, whose name is already associated with work on the intracellular forms in cancer, is obtaining positive experimental results. That blastomycetes occur in malignant growths appears to be established. That the sporozoa may be the cause of some malignant new growths is not necessarily quite put out of court, but their cultivation will, I take it, be a still more difficult matter. With the amount of positive work before us the evidence is incontestably in favour of the blastomycetes.

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Special Articles

THE CARE OF CHRONIC EPILEPTICS

By W. W. IRELAND, M.D.

ONE must admit that epilepsy is a malady over which medicine has little power. We have, it is true, gained some knowledge as to the general and dietetic treatment of the disease, and the introduction of the bromides was a decided gain to therapeutics, though continued dosing with these drugs brings its own evils. Nevertheless, though there are cases of improvement and a few of cure, there is a large number of epileptics who derive little or no benefit from treatment. We have only some loose methods of reaching a notion of the number of chronic epileptics. Pelmann's estimate of fifteen epileptics to every 10,000 seems the most likely.[1] This would give us about 6000 epileptics for Scotland. The number of those who are unaffected in mind has been variously estimated; probably from 20 to 25 per cent. of all epileptics are actually insane, and these are cared for in the asylums, where they are often good workers, though dreaded for their explosions of temper. Many epileptics, not actually lunatics, are droll, eccentric, and irritable, or weakened in mind; but perhaps 40 per cent. may be regarded as not mentally affected. It is somewhat surprising to note how much force of mind and muscular strength may persist with the daily recurrence of epileptic attacks. As a rule these unfortunates rather shun notice, and slowly recognise the unhappy consequences of the malady. The sudden onset of the attacks and the emotion, alarm, and distrust which they arouse, in the end shut out epileptics from employment. Thus the privations of poverty and the tedium of enforced idleness increase their wretchedness. To the best of my knowledge, epileptics are excluded from the benefits of almost every charity in Scotland by express regulations. About the first who did something for

[1] The principal authorities used for the details given in this article are the chapter on Sonderkrankenanstalten und Fürsorge für Nervenkranke, Epileptische, und Idioten, von Dr Wildermuth, in "Handbuch der Krankenversorgung und Krankenpflege," erster Band, Berlin, 1898; Die Heil und Pflegeanstalten für Psychischkranke des deutsches Sprachgebietes," von Dr Heinr. Laehr, Berlin, 1891; and a paper on Epilepsy, by Dr F. M. Powell, Superintendent of the State Institution for Feeble-Minded Children, Glenwood, Iowa, 1898.

the special help of this unfortunate class was the Rev. John Bost, who in 1862 founded a refuge for young epileptics amongst his group of asylums at Laforce, near Bordeaux. In the same year the small institution of Pfingstwaide in Wirtemberg was opened.

It was a German clergyman who first showed how epileptics could help one another. In 1867 the modest beginnings were made to the colony of Bielefeld, destined in thirty years to become the city of refuge of the epileptic. In the *Revue des Deux Mondes*, 1st September 1897, there is an article *L'Allemagn Religieuse*, which records some of the work done in this now flourishing institution. To use the words of the author, M. Goyau:—"This city supports itself; it is the unfortunate inhabitants who sustain it. They are carpenters, brickmakers, saddlers, shoemakers, tailors, and gardeners, and the tradesmen of the neighbouring town scarcely get any orders out of this industrious suburb. Formerly epileptics were thought good for nothing, but the Pastor von Bodelschwingh has proved to all, and to themselves the first, that well cared for and well grouped they are fit for anything."

We learn from Laehr's useful guide already cited that the aim at Bielefeld is to take epileptic patients for bodily and mental care. It is at once a hospital and an establishment for education, teaching, and carrying on work. It is an area of 420 acres (Morgen) with 59 separate buildings. Pastor von Bodelschwingh is the superintendent, and there are three resident medical officers. Patients chiefly come from the Protestant parts of North Germany. Epileptic children who are capable of instruction are received. On the 1st January 1890 there were 1042 patients; 1229 epileptics had been cared for during the past year. Of 137 dismissed there were 21 cured, 38 improved, and 78 not improved. There were 50 deaths. The institution was founded through the free Christian beneficence of the German Evangelical Church.

The success of this memorable experiment ensured repetition. There are now twenty-eight special institutions for epileptics in Germany and Switzerland.

By a law passed in Prussia in 1891, it was enacted that from the 1st of April 1893 the parochial boards should provide for the care and maintenance of those needing help among the insane, idiots, the epileptic, the deaf and the blind, and that special establishments should be provided for those who require such care. In accordance with this law, the existing institutions for epileptics and the asylums for epileptics and idiots were utilised, but separate buildings have already been erected or are in the course of erection for sane epileptics. In this way above 900 patients are being cared for.

In France there is a large hospital for epileptics at La Teppe, in the Department of the Drôme, under the care of the Sisters of St Vincent de Paul. In Lyons there is a great foundation for the relief of epileptics made by Madame Marie Courajod. In North America the people are prompt to put new ideas into practice.

As Dr Powell has observed, "During the last ten years a wave, a movement, a sentiment has spread over the United States for segregating epileptics in colonies, provided liberally with land, shops, schools, and expert medical attendants. The first public was made by the State of Ohio, which can now boast of the colony of Gallipolos with 600 patients."

Similar institutions have been set agoing in Massachusetts, Pennsylvania and New Jersey. In 1894 the Legislative Assembly of New York took up the duty of the relief of epileptics, and the Craig Colony was opened. The colony is situated on 1872 acres of its own land. It was able to produce 50 per cent. of the cost of its maintenance during the first year, and "there is reason to believe that the value of manufactured and home products will ultimately reach 75 per cent. of the entire cost of maintenance." The number of inmates appears to be about 214. A new farm of 187 acres has been opened last year at Maplewood near Bound Brook, destined to relieve the States asylums of 1000 epileptics. Dr Powell tells us "The National Society for the Study of Epilepsy, and the care and treatment of epileptics, composed of physicians, scientists, philanthropists, and practical charity workers, has for its scope of work the following:—

1. The scientific study of epilepsy.
2. The rational treatment of the disease.
3. The best method of caring for dependent epileptics, including:—(*a*) The construction of proper homes, based upon a study of the epileptic's needs, as to classification and environment. (*b*) The study of the utilisation of the epileptic's labour for economic, scientific and ethical reasons. (*c*) The study of the best educational methods to be employed, including manual, industrial, intellectual and moral forms and forces.

This, then, briefly indicates the plan now being agitated, or inaugurated, in nearly all of our leading states."

Dr Wildermuth remarks that it is surprising that England, whose care for the insane has afforded an example to the whole world, should be so late in being aroused to do something for the special care of the epileptic. But now there are many proofs that the generous heart of that country has been stirred. Already England can point to the colony for epileptics at Chalfont, near London, on a farm of 135 acres, giving shelter, employment and medical care to about 50 epileptics; the Maghull Home for epileptics near Liverpool, with about 150

inmates; and the Meath Home at Godalming for female epileptics, which provides for 50. Moreover, the London County Council are going to have a colony for epileptics upon their Horton Manor estate in Surrey, where a seventh County Lunatic Asylum is being erected. Another colony for epileptics and imbeciles is to be formed in Lancashire by the Chorlton and Manchester Unions.

While so much is being done in other countries to relieve a class so deserving of compassion, it is dispiriting to think that Scotland has not even yet started on the same path of charity; yet we hope that a movement will soon be set agoing which will leave the northern kingdom behind no other people.

Meetings of Societies

British Medical Association

Glasgow and West of Scotland Branch

THE Winter Meeting was held in the Victoria Infirmary, Glasgow, on March 24th.

The Secretary, Dr Jas. Henderson Nicoll, reported a continuance of the large and steady increase in the Branch, amounting during the past two years to a net gain of over one hundred members.

The following office-bearers were elected:—*President*—Dr Frew (Kilmarnock); *President-Elect*—Dr D. C. M'Vail; *Vice-Presidents*—Drs Fergus and M'Lachlan (Dumbarton); *Representatives on Council*—Drs Goff and Fergus; *Members of Council*—Drs W. L. Muir, Sam. Sloan, Jas. Finlayson, J. R. Black (Greenock), Eben. Duncan, T. Graham (Paisley), Wylie (Kilmarnock), W. Findlay, and Sir Wm. T. Gairdner, K.C.B.; *Secretaries*—Drs Jas. Henderson Nicoll and T. W. Jenkins.

Drs Goff and Fergus reported to the meeting on the action of the Council on the "Amendment of the Local Government (Scotland) Act" as affecting the position and interests of the Scottish Poor Law Medical Officers, and on the Midwives Bill. With reference to the latter, Dr D. C. M'Vail moved (Dr T. Graham seconding) that "This meeting is of opinion that the Midwives Bill at present before Parliament would, if passed into law, be injurious to the interests of women who require obstetric assistance, and the Branch wishes tc petition the House of Commons against the Bill, and directs the President and Secretaries to communicate with the Members of Parliament for Glasgow and the West of Scotland, requesting them to oppose and vote against the Bill." Dr Munro Kerr moved as

an amendment (Dr S. Sloan seconding) that "The consideration of the Bill be remitted to a special meeting of the Branch convened for the purpose." On a vote the motion was carried by a large majority.

The members of the staff of the Victoria Infirmary treated the meeting to an interesting clinical demonstration of medical and surgical cases.

In the evening the Branch dined in the St Enoch Station Hotel, when Dr Frew occupied the chair, and a large company was present.

Aberdeen Medico-Chirurgical Society

A MEETING of this Society was held on the evening of the 6th April, Dr T. Milne, president, in the chair, and was devoted to a demonstration of specimens, mainly pathological.

Professor Stephenson showed a uterus with placenta (partial praevia) attached: the specimen was from a native of Australia, who died soon after the child was born and before medical aid could be got: the lower uterine segment was seen to be much thinned out and Bandl's ring was clearly shown.

Dr Angus Fraser showed sections of a liver from a case of pernicious anaemia: they were stained with ferrocyanide of potassium and hydrochloric acid, and demonstrated a remarkable wealth of iron particles in the liver.

Dr A. H. Lister showed (1) section of a tumour, probably adenomatous, from the base of skull and brain taken from the case recorded in this journal, 1898, Vol. iii., p. 21. (2) A stained specimen of blood from a case of splenomedullary leucaemia.

Dr G. M. Duncan showed (1) the organs from a case of ulcerative endocarditis, preserved in formalin; (2) sections of three breast-tumours, respectively adenoma, fibro-adenoma and intracanalicular fibroma; (3) a stained specimen of Widal's reaction; (4) secondary cancer of the liver—the primary disease being in the oesophagus.

Dr Usher showed sections of (1) anterior polar cataract; (2) transverse calcareous film of the cornea; (3) bone in the choroid.

Dr Ashley W. Mackintosh showed (1) a cord with secondary ascending degeneration, from a case of fracture-dislocation of the spine, causing complete transverse division of the cord; (2) the cord from a case of spinal caries; (3) sections from the cords of four cases of newgrowth and cavity-formation in the spinal cord (syringomyelia); (4) a segment of a child's brain, showing atrophy and sclerosis, mainly cortical, in the motor region.

Dr Gordon showed (1) the organs from a case of suspected

acute phosphorus poisoning ; (2) a tumour of the pituitary body, with a microscopical section—probably large-celled sarcoma.

Dr Marnoch showed (1) a section of a fibrous neuroma of the external saphenous nerve ; (2) carcinoma mammae from a girl, aged twenty-two, with microscopical section ; (3) section from a case of tubercular epididymitis.

Forfarshire Medical Association

A MEETING of this Society was held on Friday, April 7th, in the University College, Dundee ; Dr M'Gillivray in the chair.

Dr M'Gillivray showed a patient with double upward coloboma and a patient suffering from well-marked follicular conjunctivitis.

Two röntgen ray photos of a compound comminuted fracture of the first phalanx of the right forefinger in a man who refused to allow amputation were shown by Dr Pirie. The later photo showed a false metacarpophalangeal joint forming and the patient had now fair movement. Dr Pirie showed several other röntgen ray photos taken by himself.

Professor Kynoch showed a papillomatous cyst of the ovary removed by posterior colpotomy and emphasised the ease with which small tumours could be removed by this method.

Dr Foggie read notes of a case of acute yellow atrophy occurring in a girl of fourteen. After a period of indefinite ill-health gastric catarrh and jaundice had set in and lasted for fourteen days with occasional hæmatemesis. Marked depression followed and was succeeded by sudden and rapidly fatal cerebral symptoms in which an initial delirium had given place to coma and tetanic convulsions. A petechial eruption was present both before and after the onset of the jaundice. No diminution in the liver dulness could be determined. Although a *post-mortem* was not allowed the diagnosis of acute yellow atrophy seemed warranted. He quoted the view recently supported by W. Hunter of the condition being a rare form of malignant jaundice of obscure infective nature due to an organic poison probably found in the intestine and acting on the liver after absorption, and he thought this view would assist in the explanation of the great clinical variation in the reported cases.

Dr Buist thought the pathological conditions described as characteristic of acute yellow atrophy belonged to the terminal stage of the disease, and acute yellow atrophy, though a rare disease, had, he said, been comparatively frequent in Dundee in recent years.

Professor Kynoch generally concurred in what Dr Buist had

said and cited a case he had during pregnancy in which he believed the condition of the intestine *post-mortem* pointed to it as the starting point of a toxæmia.

Dr Pirie also spoke, and Dr Foggie briefly replied.

Mr Greig then gave a further communication on two years' experience in the Surgical Outpatient Room of the Royal Infirmary. He had had 63 cases of malignant and 40 of non-malignant tumours; of the latter 18 were sebaceous cysts, 11 in males and 7 in females, the average age being 38. Thirteen of these nonmalignant tumours were papillomata, two of which were in the mouth, one in a female aged 80, and another in a child. He discussed the pathology of this condition and stated that injury by the tooth was usually the primary cause.

Other tumours were 4 ranulæ, 3 hæmatomata, 3 implantation cysts, 2 dermoids, fibromata, lipomata, and 3 myxomata.

Of the 63 malignant tumours 2 were carcinomata of the breast, 5 sarcomata, and 33 were epitheliomata. Of these last the youngest was 36 and the oldest 80 years of age.

There had been 15 cases of mammary abscess, 3 of which were in patients not nursing at the time. In the remainder of the cases the abscess occurred while nursing the first child, one the fourth, 3 while nursing the fifth child. The average age of the children when suppuration occurred was 6½ weeks.

The cases of hydrocele numbered 26, six of which were in infants in whom he recommended needling, which was making several small punctures rapidly by a needle into the sac.

The cases of hernia numbered 100, of these 88 were inguinal, and 59 of these were between the ages of 1 and 10 years. Mr Greig's statistics showed the cases of inguinal hernia on the right side to be four times as common as on the left. Of 32 cases in males 28 of these had phimosis. He recommended circumcision in these cases but was not prepared to say phimosis was a cause of hernia.

Twenty-four cases of erysipelas had attended during those years, 10 of them having it on the face. They were all treated with 1 to 500 of perchloride of mercury in glycerine and 10 per cent. to 25 per cent. of ichthyol.

There were 21 cases of bursitis, 16 of ganglia and 21 of tenosynovitis.

The Chairman, Professor Kynoch, Drs Halley and Gray, all spoke on and referred to the interesting nature of the paper.

Mr Greig replied emphasising his treatment of erysipelas and free incision and drainage under chloroform as the proper treatment of mammary abscesses.

Scottish Medical News

Aberdeen University.

THE Graduation Ceremony was held on Friday, April 7th.

HONORARY DEGREES. — Among the recipients of the Honorary Degree of LL.D., were James Frederic Goodhart, M.D., F.R.C.P., an alumnus of Aberdeen University, and Professor Charles Stewart, F.R.S., Conservator of the Museum of the Royal College of Surgeons.

ORDINARY DEGREES.—I. *Degree of B.Sc.*—David M. Gall (with special distinction in Geology); Charles D. Rice, M.A. (with special distinction in Chemistry); Geo. J. T. Stewart, M.B., Ch.B. (with Honours—Old Regulations).

II. *Degree of M.D.*—[1] William Findlay, M.A., M.B., 475 Union Street, Aberdeen. Thesis — "Conium Maculatum: Observations on its Pharmacology and its Preparations." George Alex. Reid, M.B., Royal Victoria Hospital, Bournemouth. Thesis—"Pernicious Anæmia." George Savege, M.B., Beverley, Yorks. Thesis—"The Preservation of the Perineum." Aaron M. Sims, M.B., 21 Grantham Road, Sparkbrook, Birmingham. Thesis—"On the use of Quinine in the Treatment of Congo Fevers." Robert B. Tydd Stephenson, M.B., Berbice, British Guiana. Thesis — "The Height and Weight of the Negro and Coolie Races in British Guiana; with the effect of acute Mental Disease on their Bodily Weight."

III. *Degrees of M.B., C.M. (Old Ordinances).*—Robert Alexander Batchan, Ruthwell, Dumfries-shire; Leonard Cotterill, Weybridge, Surrey; Alexander Brown Cruickshank, 374 Great Western Road, Aberdeen; John Halley, 45 View Terrace, Aberdeen; Donald Mackenzie Fairburn, Muir of Ord, Ross-shire; Richard Norris Petrie, The Parsonage, Alford, Aberdeenshire; Alex. Charles Profeit, Dinnet, Aberdeenshire; Joseph Sebastian de Silva, Moratuwa, Ceylon.

IV. *Degrees of M.B., Ch.B. (New Ordinances).*—Alexander Henderson Cran, M.A., Nigg, Ross-shire; James Matthews Duncan, M.A., 3 Bon-Accord Crescent, Aberdeen; Cecil Vivian Moore Etienne Le Fanu, 86 Hohenzollern Strasse, Cassel, Germany; [2] George Alexander Finlayson, M.A., 66 Bon-Accord Street, Aberdeen; John Charles Galloway, M.A., F.C. Manse, Oyne, Aberdeenshire; Arthur Norman Haig, M.A., Ahmednagar, Bombay, India; Charles Hunter, M.A., Badenscoth, Rothienorman, Aberdeenshire; Francis Alex. Innes, M.A., F.C. Manse, Skene, Aberdeenshire; John Wm. Lindsay, M.A, Stanley

[1] The Thesis of Mr Wm. Findlay was considered worthy of "Commendation."
[2] Passed Final Examination "With Credit."

Cottage, Peterculter, Aberdeenshire; James Henderson Mackay, M.A., 35 Albert Street, Aberdeen; John M'Pherson, 49 Clifton Road, Aberdeen; George Alex. Mavor, M.A., 363 Great Western Road, Aberdeen; Alex. Mennie Mitchell, M.A., Old Rayne, Insch, Aberdeenshire; Charles Murray, M.A., 11 Rubislaw Terrace, Aberdeen; Alex. Bruce Simpson, Forbes Cottage, Alford, Aberdeenshire; James Alex. Stephen, M.A., St Andrews —Lhanbryd, Elgin; Lessel Philip Stephen, M.A., Conglass, Inverurie; William Edward Taylor, 10 South Crown Street, Aberdeen; James Alex. Tolmie, M.A., Glenglassaugh, Portsoy, Banffshire; John Horne Wilson, 12 Belgrave Terrace, Aberdeen.

GRADUATION HONOURS.—The following candidates graduate with "Honourable Distinction":—George A. Mavor, Aberdeen; Lessel P. Stephen, Inverurie.

V. *Diploma in Public Health.*—Alexander Keith Campbell, M.B. (Edin.), Montrose (with credit); Wm. Ironside Moir, M.B. (Aber.), Aberdeen; Wm. Henry Neilson, M.B. (Aber.), Major, Ind. Med. Service.

A largely attended and very successful reception was held by the Principal and Professors of the University in the Mitchell Hall on the evening of the graduation day in honour of the graduates.

The University prizes and gold medals in the Faculty of Medicine were awarded as follows:—

Fife Jamieson Gold Medal in Anatomy, Robert Aird, M.A.; Shepherd Gold Medal for Systematic and Practical Surgery, John C. Galloway, M.A.; Keith Gold Medal for Systematic and Clinical Surgery, Henry Fraser; Matthews Duncan Gold Medal in Obstetrics, J. W. Lindsay, M.A.; James Anderson Gold Medal and Prize in Clinical Medicine, G. A. Finlayson, M.A.

CALEDONIAN MEDICAL SOCIETY—CELTIC PRIZE.—The Caledonian Medical Society hope to institute an annual prize for an essay on some Celtic subject—ethnological, historical, philosophical, or medical. They have decided this year to offer a prize of five guineas for an essay on "The Ethnology of the Scottish Gael," under the following conditions:—

1. The competition for this prize shall be open to members and non-members, medical men and others, the only restriction being that competitors must be of Celtic birth or descent.
2. The essay shall be written in English, and not exceed 20,000 words.
3. The judgment of the examining committee shall be final.
4. The successful essay shall become the property of the Society, and be published in the *Caledonian Medical Journal.*

5. Essays sent in for competition shall bear a motto only, the name and address of the writer to be enclosed under seal.
6. Essays to be sent under cover to Dr S. Rutherford Macphail, Honorary Secretary, Caledonian Medical Society, Rowditch, Derby, by 1st August, 1899, endorsed "Celtic Prize."

Reviews

System of Diseases of the Eye: By American, British, Dutch, French, German, and Spanish Authors. Edited by W. F. NORRIS, M.D., and CHARLES A. OLIVER, M.D., Philadelphia. Vol. II., roy. 8vo, pp. 556, with plates and woodcuts. Vol. III., roy. 8vo, pp. 962, with plates and woodcuts. London: J. B. Lippincott & Co. 1898. Price 21s. each, net.

THE first volume of this work was reviewed in a former issue of this journal (see *Scottish Medical and Surgical Journal* for 1897, pp. 460-1). The second volume of this series deals chiefly with the examination of the eye, school hygiene, statistics of blindness, and antisepsis. The opening chapter is from the pen of Professor Snellen of Utrecht, "On the Methods of Determining the Acuity of Vision." No living writer is qualified to treat this subject with profounder knowledge or better judgment. His contribution is brief, authoritative, and masterly.

Dr H. Snellen, jr., deals concisely with the action of mydriatics and myotics. Useful sections follow on lateral illumination of the eye, by Dr Laqueur of Strasburg; on ophthalmoscopy and retinoscopy, by Drs Gould and Jackson of Philadelphia; and on prismometry, by Dr Dennet of New York. In the next succeeding sections the editors have been fortunate in securing the co-operation of writers whose names have been so closely associated with the evolution of knowledge in the subjects of which they treat, as those of Javal for ophthalmometry, Stevens for the estimation of the balance of the extra-ocular muscles, Wilbrand on perimetry, and Thomson on the detection of colour blindness. There is a well illustrated and thoroughly practical section on school hygiene, by Dr Risley, and the volume concludes with articles on blindness, its

frequency, causes, and prevention, by Dr Minis Hays ; on antisepsis, by Dr Andrews ; and a very much needed section on the micro-organisms of the conjunctival and lacrymal sacs, by Drs M'Farland and Kneass of Philadelphia.

The third volume, comprising local diseases, glaucoma, wounds, injuries, and operations on the eyes is the most interesting that has yet appeared, and contains a collection of monographs of the highest practical value.

The first sixty pages are occupied by a well written chapter on diseases of the orbit, by Dr Stedman Bull. Dr Harlan's article on diseases of the eyelids errs, we think, on the side of brevity. A second from his pen, on the operations performed upon the eyelids is illustrated with familiar woodcuts of classical methods, and the section on "blepharoplasty" is excellent, but we have looked in vain for a description of Van Millingen's admirable operation for the relief of trichiasis and entropium. The casual reference made to it on pp. 99 and 100 is misleading, by suggesting that *sutures* are required to keep the transplanted mucous membranes in position, which is certainly not the case.

Diseases of the lachrymal apparatus are discussed in an interesting and practical way by Dr Theobald of Baltimore. His views on the treatment of strictures of the tear duct by probes of much larger size than Bowman originally recommended, are here clearly set forth. They have not hitherto been generally adopted hy ophthalmic surgeons. For the great majority of cases we concur rather with the teaching of Professor Knapp on pp. 904-7.

In discussing diseases of the conjunctiva and sclera, Dr Swan M. Burnett rightly emphasises the importance of the preventive treatment of ophthalmia neonatorum. While guarding himself from asserting that every case of purulent conjunctivitis in new-born infants is due to gonorrhœal infection, he recognises that grave consequences often ensue where neither the history nor bacteriological examination reveals the presence of Neisser's coccus. In twelve of the States of the Union the compulsory notification of ophthalmia neonatorum is required by law, in order to secure that infants receive proper professional treatment, and that the danger of lifelong blindness may be averted if possible.

The contribution by Messrs Brailey and Sydney Stephenson

on diseases of the iris and ciliary body is marred by a ridiculous blunder. On p. 261 we are informed that the size of the pupil may be measured by Priestly Smith's *tonometer*, and that instrument is duly illustrated (Fig. 5). In the neighbouring text the apparatus actually described does not correspond with the illustration. To any one familiar with this subject, it is evident that the word *tonometer* ought to be *keratometer*, and that Fig. 5 is quite out of place in this part of the book. Its correct position is given on p. 658.

Dr Hill Griffith of Manchester supplies a carefully-written paper on diseases of the choroid and vitreous. One of the longest and best illustrated articles is that on diseases of the retina by Professor Schöbl of Prague, and from the same city Professor Deyl discourses on diseases of the optic nerve. Glaucoma receives full justice at the hands of Mr Priestly Smith of Birmingham, who has done so much to elucidate our knowledge of this difficult subject.

Wounds and injuries of the eyeballs are rather scantily treated by Dr Gruening, and the section on injuries due to heat and light is markedly deficient for a work of reference such as this system.

Dr Randolph of Baltimore discusses sympathetic ophthalmia in an interesting manner, and gives a very impartial *résumé* of our present knowledge of this terrible malady.

Perhaps the very best part of the whole volume is the concluding article by Professor Knapp of New York, on the "Operations usually performed in Eye Surgery." It is written in that lucid style which he so happily commands, with rare knowledge of ophthalmic methods and keen practical judgment. His mature recommendations and criticisms, founded as they are on vast clinical experience and experiment, cannot be too highly commended to his younger brethren. We await with interest the final volume of this series.

A Treatise on Unripe Cataract. By WILLIAM A. M'KEOWN, M.D., M.Ch. 8vo, pp. 202. 68 illustrations. London: H. K. Lewis. 1899. Price 12s. 6d. net.

IT is undoubtedly true at the present time that with few exceptions ophthalmic surgeons delay operating until a cataract

has become what is technically termed "ripe," that is, has reached the stage in which it is supposed to be easy to extract in its entirety. The recognised barrier to the surgical treatment of "unripe" cataracts is the difficulty of removing the cortex of the lens, and the subsequent risk of irritation, and the delay in recovering useful vision.

It is to the solution of this difficulty that Dr M'Keown has specially directed his attention. Since 1884 his name has been prominently associated with the treatment of immature cataract by intra-capsular injection and irrigation. In this handsome monograph he now gives not merely a full description of his apparatus and technique, but a most careful summary of his observations on the recognition of various types of cataract, and a statement of his experiences in the treatment of more than one hundred and fifty cases as bearing on the procedure which he recommends and practises. His clinical observations are acute, his mastery of detail is evident on every page, and the whole work bears the imprint of a vigorous mind. We heartily commend Dr M'Keown's book to our ophthalmic brethren.

Atlas of Legal Medicine. By Professor E. von HOFMANN, Vienna. Translated by FRED PETERSON, M.D., New York, and A. O. J. KELLY, M.D., Philadelphia. Post 8vo, with 58 coloured plates and 193 illustrations in black. London: The Rebman Publishing Co. 1898. Price 15s. net.

THE enterprise and scientific zeal of our American colleagues is well shown by the number of excellent German works which they translate and by which we in this country so largely benefit.

One of the latest of these is the lamented Professor Hofmann's "Atlas of Legal Medicine." We have known and appreciated the original handbook, and feel sure that in its more accessible form it will appeal to a much larger audience. The other hand-atlases of this series are already well known, and the present is in no respect inferior to its fellows. Other atlases, such as those of Lesser, are no doubt fuller, but their price is prohibitive, while this one fully meets all requirements, and its price is very moderate.

Few medical practitioners have the opportunity of practically studying to any adequate extent forensic medicine, and yet at any time the medical man may be called upon to give expert evidence in a court of law. To those, as well as to the medical student, a collection such as we have in this atlas must prove of the greatest value. It consists of photographs and original drawings of various lesions and pathological conditions taken directly from actual cases, and the whole array is such as it would take many years for one to see in practice. Almost the whole range of legal medicine is gone over, and specially valuable are the excellent coloured drawings showing the effects of poisons on the internal organs. The explanatory text is full and, as a rule, well translated, but it is difficult for us to become accustomed to the American mode of spelling and expression. Take this for example: "These are the usual findings after fetal suffocation, and permit, as a rule the diagnosis of such a process. Extra-uterine such a complex of signs can only occur when the child—immediately from the maternal genitalia—is deposited within the birth-fluids." In time, and perhaps when the alliance becomes stronger, we shall no doubt note these peculiarities less, but meanwhile we owe a debt of gratitude to Drs Peterson and Kelly for their labours in translation.

Dwelling Houses: their Sanitary Construction and Arrangements. By Professor W. H. CORFIELD, M.D., F.R.C.P. (Lond.). Fourth edition. Post 8vo, pp. 125, with 45 illustrations. London: H. K. Lewis. 1898. Price 3s. 6d.

A FOURTH edition of Professor Corfield's well-known little work on the construction of dwelling-houses has appeared. The book consists of six chapters, which were originally delivered as a course of lectures before the Society of Arts. The subjects of situation, construction, ventilation, warming, water-supply, and sewerage of the house are briefly but adequately dealt with. It is needless at this date to commend a work which is already so highly appreciated. To sanitary inspectors, medical students, or to those who merely intend to build a habitation for themselves, such a work as Professor Corfield's will prove of the utmost value.

Notes on Books and Journals

Janus : Archives internationales pour l'histoire de la Médecine et pour la Geographie médicale, paraissant tous les deux mois. Directeur : Dr H. F. A. Peypers. Harlem. Third year, first and second parts, July-August and September-October, 1898.

Janus appeals to all practitioners of the healing art who take an interest not only in the modern and practical, but also in the literary, historical, antiquarian, and geographical aspects of their professional work. Dr Peypers will have the sympathy, and ought to have the support, of the majority of the profession in his arduous undertaking, for assuredly it is no light task to bring out every two months such a journal as *Janus*. That he has been able to do so with success for more than two years speaks well for his perseverance and for the hearty support he has received from the numerous collaborators whose names appear on the title-page.

It is truly an international periodical : it is published in Holland ; it contains articles in French, English, and German ; and it numbers among its writers men living in England, Scotland, America, France, Germany, Holland, Belgium, Spain, Italy, Scandinavia, Russia, Turkey, Mexico, Japan, and Batavia. It might be well if one of the rules which the editor seems to have laid down for himself were not so rigorously carried out—we refer to the regular alternation of French, German, and English in the articles ; for this leads to the appearance of articles in English by foreign authors, since apparently the English writers are in a minority, and this does not conduce to elegance in style. In another particular also the rule as to uniformity in language might profitably be relaxed—we allude to the custom of translating the titles of journals, etc., into the language in which the article happens to be written ; thus, " L'association médicale anglaise " does not, at first sight at any rate, suggest the British Medical Association.

These, however, are small blemishes in an excellent and uniformly interesting journal. The contents are of a most varied kind. In the two parts under review, for instance, the subjects dealt with include the plague in Formosa, syphilis in Corsica in the eleventh century, letters of Sydenham, the humoral doctrine of the Hindoos and the Rig-Veda, experiments with Unna's

new method of treating leprosy, the medical geography of African diseases, the evolution of the surgeon from the barber, the malaria problem, and the early history of anæsthesia. In the last-named article, which is from the pen of Dr Cabanès, we note that the common error is perpetuated of confusing Sir James Simpson's discovery of chloroform with his use of ether in producing unconscious parturition. Besides original papers, the journal contains well selected abstracts from medical periodicals in all parts of the world and there are also reviews. We can heartily recommend *Janus* to the more philosophical members of the profession at home, and to the many medical men scattered abroad in the British colonies and dependencies.

The Anatomy of Labour, as Studied in Frozen Sections, and its bearing on Clinical Work. By A. H. F. BARBOUR, M.A., B.Sc., M.D., F.R.C.P.E., F.R.S.E., Lecturer on Midwifery and Diseases of Women, School of Medicine, Edinburgh. Second Edition. Post 8vo, pp. 362, coloured and other plates. Edinburgh: W. & A. K. Johnston. 1899. Price 6s.

DR BARBOUR'S book on the "Anatomy of Labour" is as full of facts as an egg is full of meat; it is not intended for the busy practitioner to peruse while on his rounds, but requires careful study. In the first instance it appeals to the teacher of obstetrics, but it also contains much that ought to interest the medical man who takes more than a casual view of his confinement cases and of his responsibility to them. It is a striking testimony to the care with which Dr Barbour worked out his conclusions, that in this, the second edition, it has not been found necessary (on account of the publication of twenty-five new sections) to alter any of the statements which were made in the first issue of the book. The work now contains about 370 pages, and the facts that have been added to our knowledge of the sectional anatomy of labour during the past ten years that are not found in this book, may be regarded as not worth knowing. We do not know any part of anatomy which has been so completely and so ably investigated (bearing in mind the necessarily limited material) as just this which Dr Barbour has made peculiarly his own among English-speaking scientific obstetricians. We agree with the author that the time to construct the history of labour from a purely anatomical standpoint has not come yet; but we also think, that when it does come, it will be found to have been materially hastened by Dr Barbour's work, both original and compiled. Dr Chipman's index deserves a word of praise, and adds greatly to the value of the book.

Fat and Blood: An Essay on the Treatment of Certain Forms of Neurasthenia and Hysteria. By S. WEIR MITCHELL, M.D., LL.D., Harv. Seventh Edition, 8vo, pp. 177. London: J. B. Lippincott & Co. 1898. Price 5s.

WHEN a work appears under the name of S. Weir Mitchell, it is a sufficient testimony of its value. When it reaches, as this has done, a seventh edition, it is obvious that it has become well known, and that its value is appreciated. To the Reviewer, all that remains is the pleasant task of most cordially recommending its perusal to those who are still unacquainted with it. One word more. The modesty of the author, the clear enunciation of his views, the minuteness in the description of his method of treatment, his anxiety to have it applied only to suitable cases, and his temperate hopefulness of its success, stamp this as a work apart, as a model book; and it would be an inestimable boon if those who feel impelled to bring new methods of treatment before the profession, would take it as a pattern of the right way to do so.

Health, Loss and Gain. By M. A. CHREIMAN. 8vo, pp. 225. London: Rebman Publishing Co., Ltd. 1899. Price 3s.

"HEALTH, Loss and Gain" is the vague title of what is really an open letter to the Medical Profession to arise and direct the world. Leon Daudet in his novel, "Les Morticoles," has painted a sinister picture of what might take place under these circumstances, but Madame Chreiman has no such fears. Only let the Doctors take up their proper position as our legislators and magistrates, and the golden age will return. This implicit faith in our knowledge, and this confidence in our honesty, would be most flattering but for the fact that the Authoress believes we would promulgate her own peculiar views. The establishment of a Medical Protectorate of Health, the reform of the law courts, the instruction of the clerical profession, and the regulation of all marriages, are among the most outstanding features of the scheme. But of course there is not a detail of life so trivial but we would have to regulate it. Needless to say, the music hall song would be revised and its rhymes amended, the "scrum" and the 'varsity race would be abolished, the very name of examination abrogated, and many other things changed before we could hope for the time

> When the Rudyards cease from Kipling
> And the Haggards ride no more.

The literary style of this work is peculiar. It is not without some force and charm, but it is too involved and too much clouded with words to be pleasant reading. Madame Chreiman

appeals to the Medical Profession to speak and write in language "understanded of the people," but it would be well if she took that counsel herself to heart. The critic has to try and understand, but few ordinary readers will go to that bother. Perhaps it does not much matter after all, for the real reforms here advocated have found able pleaders long ago, and the other changes demanded are not likely to come to pass, nor is it probable that the world would be much better if they did.

The Power of Nature in Disease. By J. WALLACE ANDERSON, M.D., formerly Physician to the Royal Infirmary of Glasgow. Demy 8vo., pp. 50. Edinburgh: W. F. Clay. 1899. Price 1s. 6d. net.

ALL those who perused Dr Anderson's essay when it appeared in this journal will think its author did well to issue it in this form, for the subject is one of great importance, and it has been treated in a scholarly and interesting fashion. The extraordinary advance that medicine has made tends to throw into the shade the elementary principles which lie at its very base. The ordinary practitioner, in the hurry and bustle of his daily work, is not disposed to spend much time in the consideration of abstract problems. If he can diagnose the disease with any facility he is quite content to know that it follows the descriptions in the text-books, and he does not bother himself with an inquiry into what disease really is. If asked to define disease he does so more or less readily, basing his definition upon the knowledge he possesses of certain common ailments. And yet how hopelessly inadequate such a definition is to the searcher after truth.

The signs and symptoms which are of use for the mere ticketing of morbid conditions are in no sense the disease. They are alterations of function or of structure, partly due to the effort Nature makes to get rid of the hidden cause, partly due to the disturbance that that cause brings about directly. That a part of the phenomena of disease is due to the reaction of the various systems against the disease has been a medical opinion since the earliest times, sometimes, indeed, minimised out of existence, at other periods exaggerated beyond all belief. At the present moment, perhaps, the pendulum has swung towards the former extreme, but, in any case, Dr Wallace Anderson has done well to draw attention to the subject. The essay is divided into two parts, the first being an excellent historical summary of the doctrine, and the second is devoted to the consideration of conditions which illustrate its meaning. The author must be congratulated on his work. The illumination of such a theme lends itself only too easily to exaggeration. In the main Dr Anderson has avoided this pitfall, and the

pamphlet can be warmly recommended as a thoughtful and eminently suggestive contribution to the discussion of the Nature of Disease.

Robert Burns and the Medical Profession. By WILLIAM FINDLAY, M.D., "George Umber." Sm. 4to, pp. 162. With 13 full-page illustrations. Alexander Gardner, Paisley and London. 1898. Price 6s. net.

AFTER-DINNER speeches by anyone below the rank of a Cabinet Minister are not classical literature, but this book by Dr Findlay puts us under the necessity of admitting him to office or else of creating a new category for himself. Whichever we do we have cause to congratulate ourselves that he was asked to reply for the medical profession at a Burns dinner, and to congratulate him on the manner in which he rose to the occasion. The result has been to put into our hands the interesting and sumptuous volume under notice. In this we have a more or less exactly chronological list and account of the various doctors with whom Burns was associated, with a series of excellent portraits of the most important. Most people are under the impression that Burns dealt with the medical profession in Death and Dr Hornbook, much as he dealt with the antiquary in Captain Grose and rather less good-naturedly, and it is refreshing to find that amongst the kindest of his friends, the most candid of his critics, and the most painstaking of his biographers, were members of the medical profession. To a member of the same profession Burns owed his appointment as a gauger. There is thus evidently enough of historic interest in the volume, and since the story does not lose from Dr Findlay's manner of telling, and is enlivened with the amplifying anecdote, its claims on the attention of medical readers are sufficiently clear.

Caledonian Medical Journal. Vol. III., p. 452. Glasgow: Alex. Macdougall. 1899.

THE third volume of the *Journal* of the Caledonian Medical Society is made up of ten quarterly issues, and in addition to the transactions of the Society, contains twenty-five original articles. Most of these articles are medical and surgical, and three are graduation theses. As the name would indicate,

several of the papers have a decided Celtic flavour. An article by Dr H. Cameron Gillies on the "Gaelic Names of Diseases," contains, we believe, the most complete vocabulary of Gaelic disease names ever printed. The study of the different expressions currently in use in various districts of the Highlands is one of peculiar philological interest, and in the discussion of these disease names the writer brings out with keen insight the underlying philosophy of the Gael. Dr Macnaughton gives copious biographical details of the "Medical Heroes of the Forty-five," and Professor Mackinnon of Edinburgh writes an interesting ethnological paper upon "The Norsemen in the Hebrides." Bordering on the sphere of the marvellous are two articles on "Second Sight" by Dr Alastair Macgregor, with circumstantial details of several cases. These papers are criticised in a subsequent article by Andrew Lang. Dr R. C. Maclagan discourses upon "The Macbeths of Islay," a family that sustained for generations the torch of Æsculapius in the Western Isles.

Abstracts from Recent Literature

MEDICINE

ON THE TREATMENT OF CHOREA. — Dr J. Comby (*Archives de Médecine des Enfants*, April, 1899) records and discusses the result of treatment in 52 severe cases of chorea, 29 of which he treated with antipyrine, and 23 with arsenic in large doses. He describes in detail the doses and method of administration of these remedies, their dangers and inconveniences, and their effect in cutting short the disease.

Antipyrine, he finds, in order to be effectual, must not only be given in considerable quantities, but in large doses at a time. A daily amount which exerts a marked influence on the disease when given in four doses, may have little or no effect when divided into ten. For a child of ten years he begins with 15 grains, night and morning. On the second day, he gives this dose three times, on the third four times, and on the fourth five times. This he considers the maximum dose for a child of this age (*i.e.*, 7½ grains *per diem* for each year of age), and he continues it until improvement appears. These large doses may be given with perfect safety, provided the kidneys are acting properly, but they should not be given if the urine is scanty or contains albumin. In about 2 per cent. of the cases in which it is given antipyrine disagrees. When it does so, the result may be a temporary morbilliform or scarlatiniform rash, or some slight digestive derangement. In one of Dr Comby's cases the

urine was greatly diminished in amount, and suppressed for one day ; he never met with cardiac weakness or syncope, or a tendency to collapse from antipyrine in chorea.

The curative effects of the drug are undeniable. In 25 out of 29 cases, recovery took place rapidly under its use—on an average in fifteen days. No danger need be feared if the urine is watched, and the above-mentioned doses not exceeded.

Arsenic yields better results than antipyrine, provided it is given with great caution and according to precise rules. It is well borne if it is given in extremely dilute solution (1 in 10,000), and followed by a glass of milk or other liquid. Dr Comby uses Boudin's solution, which is about one-tenth the strength of our liquor arsenicalis. He begins by giving 10 grammes of this (containing $\frac{1}{65}$ grain of arsenious acid) every two hours, to a child of seven years. On the following day the dose is increased to 15 grammes, and each day it is further raised by 5 grammes, until on the sixth it has reached 35, which is regarded as the maximum dose for this age. The dose is then diminished daily by 5 grammes until 10 grammes is reached, and it is then discontinued. In children of five or six years, he begins with 5 grammes of the solution and only goes up to 25. The children are kept in bed, not allowed to sit up, given nothing but milk (or if they will not take that, bouillon or clear soup), and their bowels are regulated if necessary by laxatives. They must have absolute quiet, and their playmates should not be allowed to disturb them.

Occasionally there are inconveniences and even dangers from this mode of treatment, and these must be watched for from the first. They are due sometimes to too large doses, and sometimes to an idiosyncrasy on the part of the patient. Intolerance of arsenic may be shown by nausea, vomiting, and other signs of digestive disturbance. If these are only slight in degree, they need not interrupt the treatment ; but if they are severe, it will have to be stopped. Arsenical paralysis sometimes occurs when large doses are being given, but it is not so common under such circumstances as it is in cases of chronic arsenical poisoning. It is generally recovered from. Occasionally a brown pigmentation of the skin is observed, but this also passes off rapidly.

The result of the treatment by these large doses of arsenic is striking. In all of Dr Comby's twenty-three cases, the disease was cut short within ten days, in some much sooner. After the third day of treatment the irregular movements subsided, sleep became quiet and the child began to use his hands, and he soon recovered control of his limbs.

While admitting the dangers which attend the use of large doses of arsenic, Dr Comby does not consider them as much more serious than those arising from antipyrine.

GALL STONES.—Chauffard (*Gazette des Hôpitaux*, No. 16, 1899) recounts a fatal case of hepatic colic. The patient, a woman forty-seven years of age, was admitted during a violent crisis of hepatic colic, from which she had suffered on previous occasions. The pain was excessive, the patient being quite doubled up with agony. There was no jaundice, no fever, and no evidence of cardiac failure or cardiac lesion when admitted. A hypodermic of morphia was given which seemed to give some relief, but quarter of an hour afterwards the patient suddenly died without developing any new symptoms. *Post-mortem* the gall-bladder was found filled with a mixture of fluid and calculi. The fluid could not be expressed by the cystic duct; it was of a pale colour, viscid consistency, and did not contain bile acids or pigments. In the fluid a large number of small calculi floated, and the cystic duct was blocked with a larger stone just at its junction with the common duct. The heart was found contracted and presented no abnormality. The brain was normal. Why did the patient die? Death in the crisis of hepatic colic though not unknown is very rare. The author considers that the patient's organic resistance had been undermined by alcohol and former uterine hæmorrhage. The prolonged and violent stimulation of the splanchnic and pneumogastric fibres might induce a reflex syncope, but then the heart was found contracted, not arrested in diastole as it should have been. The author considers that it is possible the hypodermic injection of morphia (0.01 grm.), small though it was, might have produced the fatal result in a patient, alcoholic, and with diminished power of resistance.

THE OPPLER-BOAS BACILLUS IN THE DIAGNOSIS OF GASTRIC CARCINOMA.—Knickerbocker, in the *Philadelphia Medical Journal* of November 19th, gives four cases examined by himself in which the presence or absence of the Oppler-Boas bacillus was a valuable aid in the diagnosis. The bacilli, first described by Oppler in 1895, are long non-motile organisms found in chains or at right angles to each other, staining readily with the aniline dyes. It never appears in the presence of any degree of hydrochloric acid but flourishes in a medium containing lactic acid.

Hemmeter, Kaufmann, Schlesinger and Riegel consider the presence of this organism a valuable diagnostic sign of cancer of the stomach, although not absolutely pathognomonic of the condition.

Sarcinæ on the other hand are found but rarely in cancer of the stomach, occurring most frequently in stomach dilatation from non-malignant causes. The Oppler-Boas bacillus and sarcinæ are not found present together in a carcinomatous

stomach, unless at the earliest stage, before the hydrochloric acid has entirely disappeared.

Knickerbocker draws the following conclusions :—

1. That, while not pathognomonic of carcinoma, the presence of the Oppler-Boas bacilli is of the utmost diagnostic value.

2. That their presence may be demonstrated in nearly every case at some stage of the disease.

3. That in a large number of cases the bacilli may be found after the tumour has involved surrounding structure to such an extent as to make extirpation impracticable.

4. That in a limited number of cases the bacilli may be found before palpable evidences of tumour.

SURGERY

RADICAL CURE OF ENCEPHALOCELE.—Winnett (*Canadian Journal of Medicine and Surgery*, 1899, p. 100) gives an interesting account of the case of an infant two months old who suffered from birth from a tumour in the lower part of the occipital region. By the end of two months it had increased to double the original size. The tumour was somewhat pedunculated, measured at the base 6½ inches, and at its largest part 8½ inches. It was not tense, fluctuated, was translucent, and could be partly emptied. In the centre was a small hard body leading to the base. The opening in the skull was indistinct. The tumour was removed by a flap operation. The removing was uneventful, and the child now enjoys perfect health, and there is no evidence of inco-ordination. On examination the tumour was found to contain besides fluid the entire cerebellum, including the vermiform processes. The cerebellum was atrophied, weighing 26 grains. Photographs of the tumour removed are given.

PRIMARY FOCAL HÆMATOMYELIA FROM TRAUMATISM—(by Pearce Bailey, New York, *Johns Hopkins Hospital Bulletin*, Dec. 1898).—A discussion on this subject took place at the November meeting of the Johns Hopkins Hospital Medical Society, *apropos* of a case reported by Dr Bailey. By *primary* hæmatomyelia he means a hæmorrhage into the substance of the cord without the intervention of a fracture or dislocation, a condition which he thinks is much commoner than is generally supposed. Many cases of so-called concussion of the spine are in reality cases of hæmatomyelia. The lesion, he thinks, is due to an actual stretching of the cord, with resulting laceration of blood-vessels and to a certain extent of centrally situated nerve fibres, and follows sudden flexions and extensions of the neck. It is most often produced in the cervical and upper thoracic regions of the cord, although the blood sometimes burrows for consider-

able distances up and down the cord. Bailey does not agree with Thorburn that this lesion is due to a momentary dislocation of a vertebra. When the blood becomes absorbed a patent cavity may remain, or new fibrous tissue may take its place. The motor symptoms depend on the site of the extravasation, and may be in the form of spinal hemiplegia or monoplegia, brachial diplegia, paralysis of the legs, or of both arms and legs. The paralysis at first, unless the lesion is very small, is flaccid in all its characters, later it assumes the central neurone type in the legs, with places in the arms of peripheral neurone type. The sensory symptoms are pain in the neck, with anæsthesia for temperature, or for pain, or for both, but with perfect preservation of tactile sensibility. These sensory anomalies are usually transitory except in severe cases. The analgesia disappears before the thermo-anæsthesia. The diagnosis depends on this peculiar dissociated anæsthesia, the transitory muscular paralysis and the rapidity of the general improvement. The prognosis is on the whole hopeful, and recovery may be rapid, well-marked cases being fit for work again in two or three months. The treatment is the same as for other spinal injuries, but operation is strongly contra-indicated.

In the discussion Barker referred to the fact that the cavities left after the absorption of the effused blood may be obliterated by glia tissue, or may become lined with glia cells, and become continuous with the central canal of the cord, and so give rise to syringomyelia or become the starting-point of a central gliomatosis. It is also worthy of remembrance, that hæmorrhage may occur from a small glioma and give rise to symptoms of hæmatomyelia. Bilateral gummata might give rise to dissociated anæsthesia.

SIMPLE PERITONEAL INFECTION AS A RESULT OF SURGICAL INTERFERENCE.—In a communication made to the *Société de Biologie* of Paris in March 1899, Professors Auché and Chavannaz give the results of their investigations as to the presence of micro-organisms in the peritoneal cavity at the end of operative measures, attended by the opening of this cavity. Twenty cases were investigated, and all of these patients recovered completely from the operation. The method of experimenting was as follows. Towards the end of the operation a few drops of the serous liquid from the lower part of the peritoneal cavity were obtained with antiseptic precautions, or, if a drainage tube were left in, some drops were obtained from it at the end of forty-eight hours. In three cases only did these investigations show that the peritoneal fluid was free from organisms. In the remaining seventeen cases, simple or mixed cultures were obtained of many different organisms. Staphylococcus albus was present in fourteen cases, either alone or associated with staphy-

lococcus aureus or pyogenes, or with the colibacillus. The general conclusions which were arrived at are as follows:—

1. In the great majority of cases (85 per cent. of their cases) the peritoneum becomes infected during the manipulations of the surgeons.

2. The number of micro-organisms introduced into the peritoneum is inconsiderable. The inoculation of a small quantity of fluid is sometimes followed by no growth, whereas in another tube, if a larger quantity be sown, a positive result is obtained.

3. This infection may not manifest itself by either general or local symptoms. The virulence of the organisms isolated has been very feeble. This is shown by the fact that intra-peritoneal inoculations in animals have been followed by no result whatever.

MIDWIFERY AND GYNECOLOGY

THE CONTROL OF POST-PARTUM HÆMORRHAGE.—R. L. Dickinson (*Brooklyn Med. Journal*, March 1899) points out that at times the compression of the uterus, as it lies in the true pelvis, is inefficient, for a relatively small part of its area can be effectually compressed between the hands above and the inside of the pelvic cavity below. Dickinson, therefore, in all cases where it is feasible, lifts the uterus as high as possible into the abdominal cavity and there manipulates. The body of the uterus is compressed against the lumbar spine, while the lower uterine segment and cervix are encircled firmly with massage. The elasticity of the recently-stretched vagina and the flabbiness of the lower uterine segment and cervix allow the body to make a considerable excursion upwards. The organ may then be seized by a hand on either side, or by one hand in front and one behind, so that pressure and friction can be comfortably applied over its entire surface. The method is only available with lax ligaments. In manual extraction of the placenta, Dickinson recommends that the fingers should do their work enveloped in the membranes whenever it is feasible. In this way infection may be avoided.

ANGIOTRIPSY IN GYNECOLOGY.—Bilhaut (*Ann. de chir. et d'orthop.*, February 1899) speaks highly of the use of the angiotribe in gynecological operations. It is a pair of forceps capable of exercising enormous pressure (up to 1200 kilog.), and of giving perfect hæmostasis, such as could hardly be obtained in any other way. Two cases are recorded in which Doyen's angiotribe was used; in both the broad ligaments were thus satisfactorily crushed, the operation being hysterectomy for fibroids.

In a third case it was used for the pedicle of an ovarian cyst with equally good results. The duration of operations is thus much diminished; the crushing of the broad ligaments makes it more easy to apply ligatures if these should be needed, and the need for keeping on clamps afterwards, with all the pain thus occasioned, is avoided.

MATERNAL AND FOETAL MEASUREMENTS. — Roberto Muggia (*Annali di Ostetricia e Ginecologia*, vol xxi. p. 136, Feb. 1899) attempts from the study of the fœtal and maternal diameters in 110 cases of labour to throw some light upon the vexed question of their relationship to one another. He found that the fœtuses of multiparæ were more developed than those of primiparæ. The influence of the father is certainly great, but the age of the mother is of more importance. The most favourable age from this point of view seemed to be thirty years or thereabout. The fœtal development is then in direct proportion with that of the mother. The weight of the fœtus represents the twenty-first part of that of the pregnant woman at the last month of her gestation. The interspinous, intercristal, and intertrochanteric diameters of the fœtus have a constant relation to these same diameters in the mother—a little less than one-third. The pelvis of a fœtus whose mother is rachitic is narrower than it would be if the mother were normally formed: the diameters are in the proportion of one-third, except the conjugate of Baudelocque, which is a little more than one-third.

ABORTION WITH UTERINE PERFORATION.—R. Riss (*Marseille méd.*, No. vii., April 1, 1899) describes the case of a iv-parous woman, twenty-two years of age, who was brought into hospital with the history that thirty-two hours previously she had aborted of a three and a half months' fœtus. The membranes had not been expelled, and there had been abundant hæmorrhage, and towards twenty hours post-abortum the discharge had become fœtid, and the general condition had become alarming. The midwife had given intra-uterine injections in the hope of bringing away the membranes. The patient was in a state of collapse, and her abdomen was distended. A fœtid sanious fluid came from the vagina. A subcutaneous injection of artificial serum was given, but with no good effect, and the patient soon died, exactly thirty-six hours after the miscarriage occurred. The autopsy showed that death had resulted from acute purulent peritonitis following very probably upon the perforation of the uterus (at the fundus) which was found. The cause of the perforation was difficult to determine. There was no evidence of criminal abortion; the woman was married and the mother of four children. Further, the opening was too large to have been

produced by the ordinary instruments used for criminal purposes. Spontaneous perforation at the fourth month of pregnancy is scarcely to be thought of. The conclusion therefore seems warranted that the rupture at the fundus uteri was produced by the tube with which the intra-uterine injection was given. An interesting feature in the case was the great rapidity with which the septic infection occurred.

AMNIOTIC INFECTION BEFORE THE RUPTURE OF THE MEMBRANES.—Lehmann (*Progrès méd.*, p. 204, April 1, 1899) reported to the Obstetrical Society of Paris two cases in which it had to be admitted that the liquor amnii had become infected before the rupture of the membranes had occurred. The women were healthy, the pregnancies were at the full term, the fœtal heart sounds were slow, yet the liquor amnii was horribly fœtid and putrid. This condition, the author thinks, is only to be explained by penetration of micro-organisms into the amniotic cavity, but he does not advance any hypothesis to explain how it took place. Usually, of course, the germs enter the amniotic cavity from the vagina after the rupture of the membranes, more rarely do they come from a general infection of the mother when the amniotic infection is secondary.

THE ALEXANDER OPERATION IN UTERINE RETROVERSION.—G. Roncaglia (*Annali di ostetricia e ginecologia*, xxi., No. 3, March 1899) deals in a very complete fashion with the value of the Alexander operation (shortening the round ligaments) in cases of mobile uterine retroversion. He thinks this operative means has been shown to be superior to all the methods of vaginal fixation, and that its only rival now is the pessary. He believes that every case of mobile uterine retroversio-flexion occurring during the sexual life of the woman ought to be cured whether it present disturbances or not. Since this condition is most often accompanied by endometritis and by parenchymatous metritis either limited to the cervix or affecting the whole uterus, it will be necessary to curette and amputate the cervix ; and since there is sometimes defect of the perineum, it will be best to do perineorrhaphy before proceeding to the Alexander operation. It has been performed 58 times by Roncaglia : in 8 only of these cases was the Alexander operation the sole treatment ; in 21 it was preceded by uterine curettage ; in 11 by curettage and cervical amputation ; in 5 by perineorrhaphy ; in 6 by curettage, amputation, and perineorrhaphy ; in 4 by these operations combined with anterior colporrhaphy; and in 5 by curettage and perineal and vaginal repair. The later history of all these patients has been followed out by the author, and in 44 of them it was possible to ascertain

the position on the uterus. In all save one the uterus was normal in position; and nearly all the patients were enjoying good health and able to do hard work. Six of the women had had eight normal gestations; one had had a premature labour of a macerated fœtus; and two had aborted. Roncaglia does not agree that it is better to perform the Alexander operation by the vaginal route as has been done by Wertheim and others—it is more difficult and less efficacious.

ECLAMPSIA.—In *Virchow's Archiv.*, Bd. 154, p. 187, Winkler gives the result of his observations on nine cases of eclampsia. He thinks that the eclamptic convulsions are due to an auto-intoxication caused by paralysis or by a total abolition of the secretory functions of the kidneys. The kidneys, on examination, show the evidence of destruction of the glomeruli and of fatty degeneration of the epithelium of the straight and convoluted tubules, together with degeneration and parenchymatous hæmorrhages. There are all the characters of marked glomerulo-nephritis present. Sometimes this manifests itself abruptly as an exaggeration of the physiological change in the kidneys due to pregnancy; at other times it appears as a chronic recurrent nephritis. The latter may have resulted from an infectious disease during infancy, and may not have been noticed until the present attack. The eclamptic symptoms in this last condition are due to the pathological change in the renal parenchyma, which acts still, though by functional overwork, due to difficult or prolonged labour.

DISEASES OF CHILDREN

INANITION FEVER IN NEW-BORN CHILDREN.—The occasional occurrence of high temperature during the first few days of life, due apparently to insufficient nourishment, was first pointed out by Dr J. W. M'Lane of New York in 1891, and has since been investigated by Holt, Tuley and others. Dr Floyd M. Crandall (*Archives of Pediatrics*, March 1899) draws attention to the fact that the condition is not so well known as it should be, and reports two cases.

The etiology of the fever in such cases is still a debated question, some holding that urinary abnormalities form an important exciting factor. It is, however, always accompanied if not caused, by insufficient nourishment, and is cured by remedying this defect. "Inanition fever" may therefore be regarded as a suitable name for the condition until its pathology is more fully known. The temperature of new-born children is so seldom taken that the occurrence of fever in them is probably often overlooked.

The symptoms are characteristic. On the second or third day, the child, who has perhaps been quiet and restful, becomes irritable and restless, the mouth is dry and the surface of the body flushed. The temperature is found to rise gradually during twenty-four to thirty-six hours and then runs up rapidly, reaching its maximum (102-105) on the third or fourth day. When nourishment is given, the fall of the temperature may be very rapid or somewhat gradual. The normal loss of weight which occurs during the first week of life is much increased in these children.

The diagnosis is made partly by exclusion, and erysipelas, septic infection and diseases of various internal organs must be examined for. The child is often supposed to be getting enough nourishment from his mother's breast until the matter is more closely investigated and this is found not to be the case.

The treatment, which is at once successful, consists in supplementing the insufficient breast-milk by artificial feeding.

ON THE MONGOLIAN TYPE OF IDIOCY.—Neumann (*Ber. klin. Woch., March 6th*, 1899) has observed thirteen cases of this disease, which has for some reason been neglected hitherto by German writers. All the patients presented the usual features of Mongolian idiocy, but, in addition, the following points were worthy of note. In seven of the thirteen cases congenital deformities were found—in one, atresia ani, in three, abnormalities of the ear, in three, nystagmus, and in two, congenital heart disease. An unusual congenital laxness of the ligaments was very evident in all of the cases. The development of voluntary motion was delayed, and dentition was both late and irregular. Neumann thinks that an irregular eruption of the teeth is to be ascribed chiefly to nervous disease, and that it has little to do with rickets. Among other peculiarities noted, which are common to idiocy in general and not characteristic of the Mongol type, were discolouration of the skin, retarded growth, a prominent belly, and protrusion of the tongue. Neumann does not consider a fissured condition of the tongue as in any way characteristic of this particular disease. Mongolian idiocy appears to be due rather to developmental error than to foetal disease. The family history is usually good; neither syphilis, alcoholism, nervous disease, nor consanguinity, was present in any of Neumann's cases. The brothers and sisters of the patient are generally healthy. It has been stated that the disease tends to occur when there is much disparity between the ages of the parents, and also that the youngest children of large families are most liable to it. Some of Neumann's cases illustrated the former point; with regard to the latter, four of the patients were first children, two were second, five were third, fourth, fifth, sixth, and ninth, respec-

tively, while two were tenth children. In discussing the differences between this disease and sporadic cretinism, the writer lays stress on the presence of subcutaneous thickening in the latter. The ossification of the carpal bones is much delayed in cretins; in Mongolian idiots, on the other hand, skiagrams show that ossification is as far advanced as in healthy children of the same age.

THE USE OF POWDERED BONE IN THE FEEDING OF ANIMALS.—MM. Gouin and Andouard related at a recent meeting of the *Société d'Agriculture* their experiences regarding the use of powdered bone in the feeding of young ruminants. Their experiments prove clearly that a greatly accelerated growth is produced by the ingestion of phosphate of lime. The substance used in these experiments was obtained from fresh and dry bones powdered, and its cost is very small.

One calf fed on an ordinary diet increased in weight during twenty-four days 27 kilos. To this diet 0·104 kilos. of fresh bone was added daily. The animal then added in twenty-four days 36 kilos. In other words, the 9 kilos. of gain in weight in this calf was produced by adding merely to its ordinary diet 2½ kilos. of fresh powdered bone. The administration of powdered bone facilitates the assimilation of the other alimentary substances, and lessens any tendency to loss of weight. The authors believe that this substance must play a most important part in the alimentation of young herbivora, and even of higher animals. The experiments seem worthy of trial in debilitated children.

TREATMENT OF THRUSH IN THE NEWLY-BORN.—In a review of Cohendy's Thesis in the *Gazette Hebdomadaire* of 16th March 1899, we find him stating that the saliva in such cases is always acid, and the alkalinity of the blood reduced. Consequently, local treatment is alone insufficient, and attention must be directed to cause a modification in the digestive secretions. A summary of the usual remedies is given, and he states that for the past three years, Professor Hutinel has employed Vichy water for washing out the stomach of such patients. This is done twice daily, and great improvement is, as a rule, noticed on the second day of this treatment; and in most cases an almost complete cure is obtained by the third day. If, however, the case of thrush be accompanied by acute gastro-enteritis, then the cure is less rapid, yet it seldom persists for longer than six days.

The success of this treatment proves, the author thinks, that the affection results from an auto-intoxication. He thinks the washing of the stomach acts in the following ways:—(1) It gives

back to the blood its alkalinity which has been lessened by the gastro-intestinal troubles; (2) It favours the formation of free hydrochloric acid, and this acts as an antiseptic; (3) It excites the muscular contractions of the stomach; (4) It carries away the pathogenic products which the stomach contains; (5) The Vichy water, containing bi-carbonate of sodium, neutralises the secretion which it finds there.

OPHTHALMOLOGY

EXPERIMENTS ON THE ACTION OF SUBCONJUNCTIVAL INJECTIONS OF SALT SOLUTION UPON ABSORPTION FROM THE ANTERIOR CHAMBER AND VITREOUS (by Dr Carl Mellinger, Basel, *Arch. of Ophthal.*, January 1899).—The action of salt solution has been shown in this most interesting and valuable paper to be available for therapeutic purposes. After injecting an emulsion of india ink into the anterior chamber of the rabbit, Mellinger injects subconjunctivally 4 % to 10 % salt solution, and after five to eight injections he finds visible differences between the two eyes. After twenty-one injections the eye in which the salt solution was used becomes almost free from ink, while the other remains in nearly its original condition, and by degrees begins to atrophy. The explanation of this result is as follows—Certain crystalline substances, among which chloride of sodium stands first, withdraw water from the tissues in proportion to their molecular composition, and to the strength of the solution. If the solution be introduced under the conjunctiva it enters the lymph spaces into which the channels from the interior of the eye empty, and tends to extract an excess of fluid from that organ. thereby making room for fresh nutritive material. The action of the solution is stronger in diseased states, and this explains the success which Mellinger has observed following its use in cases of opacities of the vitreous.

THE ANTISEPTIC ACTION OF THE TEARS (by Dr Ludwig Bach, *Würzburg. Arch. of Ophthal.*, January 1899).—One of the most important steps in recent scientific progress is the discovery that the organism produces substances which protect it against bacterial action. Ziegler has shown that mucus will kill pus cocci and cholera spirilla, if not present in too large a quantity, in twenty-four hours. Bach and Bernheim have attributed to the secretions of the lachrymal gland and the mucous glands of the conjunctiva the same properties. Ahlström took exception to Bach's statements, and produced evidence to show that the tears are not always active in disinfection. He attributed their variable action to the varying alkalinity, claiming that the antiseptic action is inversely as the alkalinity. Bach in

the present article re-establishes his position, and proves that the alkalinity has nothing to do with the case.

ARGYRIASIS AFTER THE USE OF PROTARGOL FOR FOUR MONTHS, by Dr R. Dening.—At the ophthalmological section of the New York Academy of Medicine in October last, Dr Dening showed a well-marked case of argyriasis-staining of the conjunctiva. The patient had been applying one drop of a 5% solution of protargol to the eye once daily for four months, with the result that a well-marked argyriasis was produced. The case is interesting as it has been claimed by the advocates of protargol that such a result did not follow its use, and therefore, that (in that respect) protargol was superior to nitrate of silver in the treatment of certain conjunctival affections. In the discussion following the reading of the paper, Dr Webster said that protargol had been employed in the Manhattan Eye and Ear Hospital, but that it had to be given up.

EXPERIMENTS ON THE GERMICIDAL PROPERTIES OF CERTAIN EYE SALVES (by Dr Straus, Brooklyn, *Archives of Ophthalmology*, January 1899).—The experiments were carried out in the Bacteriological Institute in Berne, Switzerland, with the salves used in the Ophthalmic Clinic in Berne, the salves being prepared with pure white vaseline. They were examined as regards their action on pyocyaneus, staphylococcus aureus, and bacterium coli. The following conclusions were arrived at: most of the salves diminished the vitality of bacteria, but acted as germicides only after days of continuous application. Straus arranges the salves examined according to their antiseptic value in the following order, beginning with the most effective and ending with those showing little or no germicidal properties:—hydrarg. ox. flav., 2%; iodoform 5 and 10%; airol, 5 and 10%; boric acid, 4%; thioform, 5 and 10%; aristol, 5 and 10%; and vaseline.

HOLOCAIN IN OPHTHALMIC SURGERY; ITS SUPERIORITY OVER COCAIN; ITS THERAPEUTIC VALUE (by Dr Hasket Derby, Boston, *Archives of Ophthalmology*, January 1899).—The author sums up the value of holocain over cocain:—

It does not cause mydriasis, and may therefore be used without danger of bringing about increase of tension. It does not affect the accommodation. It brings about a greater degree of anæsthesia than cocain. In cases of severe and painful inflammation, which resist cocain, holocain often proves efficient. Unless swallowed or injected subcutaneously, it produced no constitutional effects. It has no effect on the corneal epithelium. It is strongly bactericidal in its action.

Per contra, cocain distinctly reduces the tendency to hæmorrhage, and it can be injected into the lachrymal sac, and often subcutaneously, with comparative impunity. We cannot agree with the above conclusions, as they are based very much on *ex parte* considerations, and therefore misleading. Cocain possesses more advantages, and holocain more disadvantages, than noted in this paper. Further, the objections to cocain in the above summary are of the most theoretical and, we may say, trifling nature. We have no hesitation in recommending cocain in preference to holocain.

Notices

THE LENVAL PRIZE.—This prize, which has been founded by Baron Léon de Lenval, of Nice, will be awarded at the International Otological Congress to be held in London, from August 8th to 11th, 1899.

The regulations for its award which were passed at the Fifth International Otological Congress, held at Florence in 1895, are as follows, viz :—

1. In connection with the International Congresses of Otology, the sum of 3000 francs has been given to found a prize, bearing the name of "The Lenval Prize."

2. The interest of this sum, which has accumulated between one International Otological Congress and the next, shall be awarded to the author of the most marked progress bearing on the practical treatment of affections of hearing during that time, or to the inventor of any new apparatus, which is readily portable and improves considerably the hearing-power of deaf persons.

3. The sum of 3000 francs will be deposited in a Public Bank in the hands of the President of the Jury.

4. The International Otological Congress will elect a Jury each time, consisting of seven members. The Jury will pronounce its decision at the closing Meeting of each Congress.

The members of the Jury as at present constituted, are Prof. Politzer (Vienna), Dr Benni (Warsaw), Dr Gellé (Paris), Prof. Pritchard (London), Prof. St John Roosa (New York), Prof. Kirchner (Würzburg), and Prof. Grazzi (Florence).

All persons desirous of competing for the prize are requested to communicate without delay with Mr Cresswell Baber, Hon. Sec. Gen., 46 Brunswick Square, Brighton, England, stating the facts on which their claim is based.

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THE SCOTTISH
MEDICAL AND SURGICAL
JOURNAL

STATES OF OVER-EXCITABILITY, HYPERSENSITIVENESS, AND MENTAL EXPLOSIVENESS IN CHILDREN, AND THEIR TREATMENT BY THE BROMIDES

By T. S. CLOUSTON, M.D., F.R.C.P.Ed.,

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FEW family practitioners have been long in practice before they meet with certain curious and often very difficult morbid conditions in neurotic children, conditions which lie on the borderland of psychiatry. The vagueness and variety of these conditions have prevented them from being systematically described. They are all referable to the brain cortex as their immediate *locus*, and almost all are pathogenetically states of deranged reactiveness of the neurons of the higher regions of the brain. They are none of them dependent on febrile states, though in some of them the temperature may be a little raised. There is no real pyrexia in a proper sense, the elevations if present being accountable for by increased and somewhat uncontrolled nerve action. In all of them the higher inhibitory centres are weakened absolutely or relatively to the amount of energising they have to control. I do not include among them conditions of delirium or unconsciousness, or night terrors; nor do I put the systematised motor explosions or convulsions, limited or general, in their category. And I do not class them as out and out "mental diseases." They are not within the legitimate bounds of "temper," "peculiarity," or "temperament" in any strict and proper sense of those

terms, vague as they are in meaning, and many and varied as are the psychological sins which those terms are made to cover. They have no necessary relation to congenital mental weakness or defect in the ordinary sense. Yet in many cases they are brain cousins to certain kinds of delirium and convulsions, they often have a spice of insanity about them, and they frequently look exceedingly like uncontrolled bursts of temper or wickedness. They can mostly be traced, as their ultimate cause, to hereditary and congenital peculiarities. There may be many exciting causes for their appearance at any special time, but the predisposing cause is nearly always defect in the subtile and most obscure process of central nerve development in the child. They are, in fact, one of the many dangers that beset the earlier stages of that marvellous march of the brain from its inchoate state of childhood up to its all-dominant place in the fully developed organism of the man and woman. They are essentially developmental in character and relationships. The higher brain must rule function and organ and life while it is in the process of development, as well as after its powers are fully formed and its structures completed. In the earlier stages of its growth one part and function of it may run ahead of other parts and functions. The due and nicely adjusted relationship of its inter-dependent structures may become deranged. The various organs and functions of the body—represented in the cortex—may be working badly, so that their brain centres are reflexly upset and irritated, thus causing explosions that spread into other centres. The inhibitory centres are in youth commonly rather weak. The higher mental centres are certainly very rudimentary then. Those adjustments and that mutual backing up of semi-independent regions that keep the brain and the whole organism acting sweetly may become interfered with temporarily and to a slight extent, causing great disturbance for the time being. As in the evolution of a great empire through the consolidation of a host of smaller states, the process of building up is always one of risk and danger. So the attainment of the completed solidarity of the fully-developed brain is full of peril to mind and body where a neurotic heredity is present. It is certainly during the period of brain growth and development that hereditary defects are most apt to show themselves.

The first of those morbid states to which I would direct attention is a simple hyper-excitability; an undue brain reactiveness to mental and emotional stimuli. This may come on at any age, from three years to puberty. The child becomes ceaselessly active, but ever changing in its activity. It is restless, and so absolutely under the domination of the idea which has raised the excitement that the power of attending to anything else is for the time being gone. When any joyous or pleasurable news is heard or any new toy is got, or any striking object is seen—a new dog, or pet, or a child friend—there results a wild delight, quite incommensurate with the cause, even for a child. It laughs, jumps, makes faces, throws itself on the ground, makes semi-choreic movements of its body and gives way to a sort of delirium of pleasure. In a short time it can neither be quieted nor its attention directed to anything else. This state is, in fact, a morbid exaggeration of the normal state of a healthy child of a nervous temperament. But it comes on in bursts in this exaggerated morbid form. The liability to it lasts for perhaps a few months or a year, the child during this time tending to get thin, not sleeping soundly, and not getting on with its education if that has begun. It seems to consist essentially of a sort of automatism of the emotional centres in the brain uncontrolled by the centres of inhibition. Those emotional centres must be hyperesthetic, and the motor equivalents and expressions explosive during such an attack, for an attack of nervous disease it is in many cases. The eye is bright and restless, the pulse quickened and the general state one of unhealth.

A somewhat analogous condition is sometimes met with in children of from three to ten where they become subject to stimuli, not mental as those last described, but from the senses—particularly from the special senses—in too keen a degree. Any loud noise will startle them and "upset" them badly, or will put them into a condition of trembling and terror. Any unusual or terrible sight will cause sleeplessness, tendency to nightmare and a condition bordering on hallucination. Such sights they re-vivify and "visualise" very intensely, to their great distress and the disturbance of everyone near them. At such times such children become sometimes intensely sensitive to pain of any kind or to unusual impressions on their skin, crying at every slight cause of that kind and not

stopping their weeping soon and forgetting all about it as the healthy child does. I have never seen such a condition of over-sensitiveness and over-reactiveness from nerve excitation in the senses of smell or taste. But certainly impressions of heat and cold may have such accentuated effects. It seems as if in such cases it was the special sense centres in the cortex that had become hyperesthetic, just as the emotional centres had become hyperesthetic in the cases previously described.

Another state which is certainly of the nature of disease is that where children become for a time so over-imaginative that they cannot distinguish between their objective experiences and their subjective images, and where, without stimuli from without, mental or bodily, they conjure up fancies so vivid that they mistake them for realities and talk about them accordingly. Of course all children, especially the sensitive and clever children of neurotic ancestry, have this tendency in a large degree, but while free from actual disease they can, by a slight effort, distinguish between the real and the imaginary. No doubt all children are more or less liars physiologically, but those of whom I am speaking are automatic and quite involuntary tellers of stories which have little or no foundation in fact. The intensity and actuality of their imaginations are greater than is consistent with sound working brain. The normally limited power of young children to come to sound conclusions about things from the facts at their disposal is in those I am describing reduced to the vanishing point, and this condition in its marked and morbid form comes and goes. At times their brains seem capable of realising facts and real impressions, and at other times they are simply the slaves of their over-excited imagination. No doubt in certain matters and on certain occasions all children may exhibit such a peculiarity without any brain condition that it would be proper to call disease, but when it gets to be the habitual state for several weeks or months and then passes off, one must conclude that some change of brain working of a morbid kind had taken place through which such mental effects were produced.

The next variety of this general class of cortical explosiveness is one I believe to be comparatively frequent. It is more distinctly and recognisably a condition of disease than some of

the states I have described, at least in its more marked examples. Its general features are as follows:—A child of between four and ten, of nervous temperament, bright, attractive, forward, and clever, has worms, or a bad cold, or some child complaint which reduces the nutrition and interferes with growth. She—for it is more common, I think, among girls—becomes capricious in appetite, irritable in temper, and has disturbed sleep and troubled dreams. Then comes a stage of what seems like very bad temper. The child resists authority, is driven wild by coercion, and when so roused assumes a maniacal and furious look. In that state she will fly at those who contradict her or who will not comply with her requests, is dull and stupid at lessons, to which she is most averse, is strange and perverse in her likes and dislikes to persons, foods, and inanimate things. She expresses suspicion and even hatred of mother, governess and sisters, is profane in language, and often prefers an unnatural solitariness of habits. Such a state is not, however, constant. The child returns to an affectionate and obedient mood, but even then is changed in certain ways from its normal self. Very little contradiction or discipline, and sometimes no such outward source of disturbance, is needed to rouse the demon in her again. When at her worst she looks really maniacal, scarcely can be roused to answer ordinary questions, her power of attention and learning lessons is gone, and no "motives" whatever act as they should do. She is all the time thin and getting thinner, looks an unhealthy colour, often acquires tricks of picking the nose, grinding the teeth, scratching the skin or making faces.

I once saw a girl of seven with the symptoms I have described in a marked and aggravated degree. There was no suspicion of imbecility and no proof of epilepsy. The child was bright and gay when well, but impulsive and wayward when ill, and for a few hours almost every day she was a perfect little demon. But at night she would be effusively affectionate and as charming as possible. Learning lessons was of course out of the question. Of anything like discipline or comfort to those about her there was none. Worms were suspected, and she was treated for them, but none existed. Tubercular meningitis was suspected, but there was no proof of it. I put her on a purely milk and farinaceous and fruit and cod-liver oil diet—she had been rather a ravenous flesh

eater. I recommended a motherly, sensible Scotch nurse instead of a governess, the mother being young and inexperienced. I laid down a daily routine of exercise in the fresh air, and suitable play, and that she should be read to from not too imaginative and exciting books, and I gave 45 grains of bromide of potassium with a minute quantity of arsenic every day. For a month only a few good effects resulted, but she in no way got worse. At the end of that time she began steadily to improve. She slept better, she became less subject to her paroxysms of irritability and temper, and she got to like her new dietary. In six months she had almost entirely recovered, and was a sweet, intelligent, fairly manageable child with no such morbid and explosive "tempers" as I have described, a comfort and attraction at home instead of being a source of the deepest anxiety. The bromide agreed perfectly all the six months it was taken, and acted manifestly as a diminisher of irritability and a promoter of nervous stability. Its permanent use was stopped when she got over the paroxysms, but a dose was given every day for a week when there seemed any unusual temper or excitability.

In such a case I have no doubt whatever that there is a condition of explosiveness in the mental cortex generally, very analogous indeed to the epileptic irritability and instability in the motor cortex.

As to prophylaxis, I think much may be done by a physiological regime of life, and a nourishing but not too stimulating dietary that will steady the neurotic and explosive tendency in such a case. I shall reserve some general remarks on this subject till I have referred to other and allied forms of this kind of brain disturbance.

I have seen in both sexes cases of persistent ungovernable sexual excitement through masturbation, several years before normal puberty comes on. No doubt in some of those cases there were local sources of irritation and excitement, but in most of them the source of the unnatural excitement was central and cortical. So far as I could make out it was not attended by the normal mental sexual imaginings of full development, but had more of an automatic character. It was accompanied in several of the cases by most depraved sexual language and a loss of all decency of conduct. It

seemed like an outburst of energy on the part of those centres in the brain which preside over the reproductive functions before the organs and apparatus had come to maturity. In two cases it seemed as if animal sexual habits had been "reverted" to, such as attempts to lick and smell the sexual organs of the opposite sex. One great difficulty, however, was to find out how far such practices had been taught such children by vicious elders. I have certainly seen in children morbid outbursts of what in older people would have been called "immorality" and attempted non-sexual crime, developing like a disease and passing away in a few weeks or months, leaving them morally as they had been before. I remember seeing a girl who took what could only be described as an attack of kleptomania, during which she stole everything that took her fancy, and this duly passed off in a few months. There are on record very many instances of homicidal attacks by children on children, motiveless, often planned and always denied at first. I once saw in the Edinburgh prison a girl of thirteen who, I had no doubt, had killed a child entrusted to her care, without any sane motive. Margaret Messinger, a girl of thirteen, was proved at the Carlisle Assizes in 1881 to have drowned a child of six months of which she had charge, and she confessed she had previously killed its brother. She had no motive and showed no ordinary excitement or depression, and there seems no reason to doubt this outburst of homicidal violence had "come on" her at the time as a disease, and had not existed for all her life, or for very long before the acts. She could not at the time in any way be made to realise the gravity of her situation, or the awful nature of the crime she had committed. An almost similar case was reported in the newspapers a few weeks ago.

I lately saw a school-boy who in practising running had lost consciousness, had then run on for a long time automatically, and at last had fallen down completely exhausted. He was confused and had headache for a time afterwards. He came of an epileptic family, but never had any motor convulsions. He had tenderness over certain portions of his head on tapping it, and could not bear to have his head shaken. The use of the bromides and iodide of potassium seemed to cure all his symptoms in a few weeks.

I saw lately a very interesting case of a school-boy of

eleven who on various occasions exhibited a curious paralysis of volition without any intellectual or emotional change, the symptoms, which had appeared in slight form at ten, at first always taking a particular form of loss of volition. It passed off after a holiday, and then came on again in an aggravated way. Then he seemed to change in character, getting very suspicious, irritable, most ungovernable at times, and entirely changed emotionally towards his parents, brothers and sisters. Yet he would read, and he slept well, and was not maniacal in the ordinary sense. In most ways he was clear in mind, his memory was good, and he could be interested in certain of his old pursuits and pastimes. This state came and went at irregular times without outward reason for it. It was the cause of the greatest distress to his relatives, and his treatment and management were most difficult. Strangers often caused less irritation than his relatives, but the control of a nurse was deeply resented. I put him on doses of 60 grains daily of the bromide of potassium with a little arsenic, running up the dose to 120 grains a day, and keeping this up for many weeks. There could be no doubt whatever as to the good effect of the drug. Irritability was calmed, morbid suspicions were given up and he was rendered manageable and became a fairly comfortable inmate of his home. He suffered in no way in health from the drug. His appetite improved. He gained in weight. Of course he was suitably dieted on milk and farinaceous foods and fruit and malt extract. He was kept in the open air as much as possible, and after a few months the tendency to pass into those neurotic storms passed away, and in eighteen months he almost got rid of them altogether. The bromide was continued in much smaller doses for two years as a precautionary measure and then given up. As he got over the irritable attacks he developed in size and weight and appearance, so that he then became older looking than his years. The process of body and brain development, as is well known, does not proceed in a steady even course, but goes on in spurts and starts. It was clearly at the beginning of one of these spurts that the nervous symptoms I have described came on.

I think this whole class of cases has the common characteristic of an explosive condition of the nerve cells in the higher cortex very analogous to the state of the motor cortex in ordinary epileptics. The katabolism of the cells is morbid. In the

rapid and marvellous development of the brain in childhood these cells not only multiply fast in number, but undergo a process of gradually becoming more stable in action. Where there is a hereditary tendency to neurotic conditions this process or nerve-steadying certainly seems not to go on satisfactorily in certain children, and an irregularly explosive tendency results. We know now, too, from Flechsig's observations, that in childhood new strands of fibre-connections are constantly being formed and opened up between the great cell areas in the brain. No doubt every such connection that is completed stirs up such cell areas to new activity by bringing them into relationship with other functional areas. Like the process of development and consolidation of a community or a nation, every new addition means new and more complicated administration, and brings risks that must be provided against. The inhibitory apparatus has to be strengthened with the widening of the areas of possible work but also possible disturbance. All nerve cells are normally explosive in action in a certain way. The physiological explosiveness of cortical nerve cells has to be prevented from becoming pathological convulsion, either motor or mental.

So far as my experience of drugs goes, I have found the bromides by far the most effective in restraining normal nerve cell action from assuming pathological forms. They must be given judiciously and with reference to the age of the patient, the acuteness and the nature of the symptoms and the effects of the drug in each case as seen by a skilled observer. They must often be given fearlessly in large doses up to the point when the symptoms of bromism are beginning to show themselves. One thing is certain, if they are to do any real good they must be given for long periods. A few doses or an intermittent course of them at first is of little good, and when they have done their work they must be gradually discontinued and not suddenly stopped. The general health, the weight and the progress of the child's nutrition must be most carefully observed all the time they are given. I do not advocate bromide treatment alone—far from it—I give tonics and food-medicines at the same time as the bromides, and the diet must receive never-ceasing attention. I think milk will be found the sheet-anchor in dieting all such neurotic children. Environment too, fresh air, suitable amusements, companionship, control,

employment must be looked to, and the schoolmaster must be regarded for the time as an aid to treatment and so under the doctor's orders.

Such an explosive brain need not remain uneducated, but it must receive its education in a physiological and medical fashion. Education must submit to be one of the factors that go to develop such an organism on sound lines, so that the greatest possible result of work compatible with health and happiness may be attained in after life. In a few cases, if there appear very acute phases of the illness, a few grains of sulphonal, from five to ten, twice a day combined with the bromides I have found very useful by accentuating the effects of the latter. The effect we aim at is to diminish undue cell katabolism and reactiveness in the cerebral cortex without interfering with brain anabolism or general body development. And we keep in mind that such effect must be carefully watched so that it does not go too far.

NOTES ON THE TREATMENT OF THE DISEASES OF THE NERVOUS SYSTEM

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Lecture II.—On the Toxins which act on the Nervous System, and on the means of counter-acting and eliminating them

SUMMARY

The varieties of nervous affection which are occasioned by toxins—the toxins which so act—metals—organic compounds—toxins of disease—toxins of auto-intoxication.

Morphological changes produced in nervous tissues by toxins—changes in nerve cells—those produced by tetanus toxin—relation of these to changes in function—action of micro-organisms.

The selective action of toxins—variety in morphological changes—idiosyncracy in relation to toxin action.

Treatment of toxic nervous disease—withdrawal of the poison—its elimination—the means of effecting this.

Antagonism of toxins by means of drugs—example in the case of malonnitril poisoning—relation which these symptoms bear to morphological changes in nerve cells—examples of the toxins of disease which may be antagonised by drugs.

Toxins of disease antagonised by anti-toxins—tetanus and its anti-toxin—varieties of the latter—method of its use—syphilis and the metasyphilitic affections.

Morphinism—its method of origin—its symptoms—its stages—danger of other narcotics being superadded—quantity of morphia taken.

Treatment of morphinism—necessity of seclusion—preliminary arrangements and preparation of patient—method of treatment by sudden and complete withdrawal of the drug—method by rapid withdrawal—method by gradual and slow withdrawal—subsequent treatment—precautions to prevent relapse.

Treatment of chronic alcoholism—Retreats—symptoms following the withdrawal of alcohol—their management—after treatment.

Antisyphilitic treatment in cases of syphilis of the nervous system—need for thoroughness—methods of administering mercury—method by inunction—its advantages—details of management—method by subcutaneous injection—when advisable—its disadvantages—preparations to be used—the use of iodide of potassium and of iodalbacid.

IN the last lecture I discussed with you the various lines which prophylaxis should take in those who are hereditarily predisposed to nervous disease, explaining in some detail the points which, I think, should be kept in view in the upbringing of neurotic children. To-day I propose to speak of a subject of great importance, and one which meets us at every turn when we are considering the treatment of nervous disease—the subject of the toxins which affect the nervous tissues.

The neurons of which the nervous system is composed are very readily and frequently affected by various toxic agencies and a considerable number of nervous diseases arise from such poisoning. Most forms of peripheral paralysis take origin in this way, as do also in all likelihood most of the so-called systemic diseases of the cord. Many cortical affections, some varieties of insanity, uræmia, diabetic coma, morphinism, the various forms of alcoholism, and probably certain affections commonly looked upon as functional may be fairly considered as due to poisoning with some one of the many forms of toxin which attack nervous tissues.

It must thus be apparent to you that the subject of toxin poisoning is of a high importance in its bearing on nervous disease, and probably I do not go too far in saying that the future of nerve treatment lies to a large extent in the direction of anti-toxins.

The action of toxins on the nervous tissues, although it has attracted great attention of late years, and has formed the subject of much research, is as yet very imperfectly understood. Still less do we understand the nature of the action of anti-toxins on the elements of the neuron. But enough light has now been thrown on this intricate and obscure subject to shew the surpassing interest of the problems involved and to give some idea of the wideness of the therapeutic field which will be opened to us as our knowledge increases.

Let us then, in order to get some grasp of so complex a subject, consider in the first place what are the toxic agents which may so act on the nervous system as to give rise to the numerous forms of lesion which are traced to such poisoning. Without attempting an exact classification, for which indeed our knowledge does not fully suffice, the following enumeration may give you some idea at once of the extent and of the complexity of the subject.

Among the metals which act as poisons on the nervous tissues may be mentioned lead, mercury, arsenic, antimony, aluminium, phosphorus.

Many organic compounds also attack the neurons. Of these the following may serve as examples: alcohol, ether, chloroform, antipyrine, trional, sulphonal. These act sometimes as acute poisons, but more commonly their action is exhibited clinically in the chronic form. Morphia, cocaine, strychnine, nicotine, and ergotine may also be added to this group.

The toxins of diphtheria, tetanus, rabies, syphilis, influenza, typhoid and other fevers, of bubonic plague, of malaria are all special poisons for the nervous tissues, though they differ much in potency, some being powerful to a high degree, while others are not nearly so dangerous. To these must be added the toxins of certain other infective lesions affecting mainly if not exclusively the nervous system, such as Landry's paralysis, Beri-Beri, polio-myelitis, polio-encephalitis.

Nor must we forget to add to our list those nervous lesions which arise from auto-intoxication, that is poisoning with the

products of a faulty metabolism, or from the retention of products which ought to have been eliminated. Of this class are the phenomena of uræmia, and the nervous lesions which occur in diabetes. Possibly those which shew themselves in pernicious anæmia may also belong to this group.

From this enumeration, which I have not attempted to make exhaustive, you will readily perceive how many and how various are the toxins which attack the nervous structures.

And now it becomes necessary to consider what the changes are which these toxins are capable of producing.

While it is hardly possible to doubt that those neurons which are affected are attacked as a whole, the protoplasmic processes, the cell body, the nucleus, and the axis-cylinder or axon all suffering, though not perhaps equally or in exactly the same way, yet the staining methods at command limit our observations, so far as acute poisoning is concerned, almost entirely to the nerve cell itself. Indeed, it is only recently that studies of the actual results of acute toxic poisoning on nerve cells have been rendered possible, and this chiefly by the application of the method of Nissl and its modifications.

Our knowledge of the changes to which these toxins give rise is due in great measure to the investigation of the results of experimental poisoning in animals. A considerable amount of work of this kind has been done during the last two or three years by such observers as Nissl, Marinesco, Babes, Hodge, Lugaro, van Gehuchten, Pandi, Berkley, Flatau, Goldscheider and others.[1]

This is not the place nor the time to discuss pathological changes, but it may be said in a word that the microscopical appearance of cells poisoned by these various toxins differs somewhat according to the individual toxin which has acted. In general there occur such changes as chromatolysis, swelling of the cell and of the nuclear bodies, and various forms of degeneration. Take, for example, poisoning with tetanus toxin. In this case the large motor cells of the ventral horns become swollen, the nuclei become large and pale, the Nissl's

[1] The small amount of experimental toxin work which has been done in this country is due to the operation of the Antivivisection Acts, the administration of which has so crippled British and especially Scottish workers in this and other similar fields of enquiry.

granules increase in size and break up in granular disintegration. It may interest you to note that the morphological changes in these cells caused by strychnine closely resemble those of tetanus,—interesting, that is, in view of the similarity in the symptoms of the two conditions.

The cell changes which follow poisoning with various toxins (metallic poisons, organic compounds, the toxins of disease) are the result of a chemical process which probably depends on the presence in the nerve cell of certain atom-groups which have an affinity for atom-groups in the toxin.

These alterations are the more pronounced and the more rapid in their development in direct proportion to the degree of concentration of the poison. But you should carefully remember that, though they are expressive of a corresponding change in function, there is no direct or traceable proportion between the amount of microscopic change and the intensity of the nervous phenomena thereby occasioned. Probably indeed other changes take place in the cells which the staining process to which they are subjected does not reveal, for, in the case of tetanus toxin, for example, the clinical phenomena may increase at a time when the morphological changes, having reached a height, are shewing signs of restitution. On the other hand the converse may obtain (as in malon-nitril poisoning), the function being apparently completely restored before the microscopic changes have disappeared.

A word may now be said as to the micro-organisms which give rise to so many of these toxins. They may themselves penetrate to the nervous tissues, and Babes has found certain forms within the nerve cells. The bacillus of plague, for example, passes by the small vessels of the grey substance of the cord to invade the nerve cells there. Those micro-organisms, which do penetrate the nerve cells, do not however seem to cause harm so much by their mere presence as by the toxins which they evolve. But most of these organisms do not attack the nervous tissues directly, and only produce their effects there by means of the toxins which they manufacture in other parts of the body.

Before we leave this part of the subject there are three points which should specially engage your attention. In the first place, you should have clearly in mind that certain nerve

cells shew an affinity for certain toxins, while others do not. The weight of the tetanus toxin, for example, falls on the cells of the ventral horns of the cord. Alcohol again, as Nissl has shewn, produces marked changes in the cortical cells, while those of the neighbouring *cornu ammonis* remain unaffected.

The second point, to which indeed allusion has already been made, is that in those instances in which the same nerve cells are affected by different poisons the appearances so produced vary. Arsenic, lead, strychnine, for example, all affect the cells of the anterior horns, but the difference in the microscopic changes so produced is definite and distinct.

To these two points, to which Nissl and other observers attach great importance, I should like to add a third, namely, that the same toxin may act differently and on different neurons according to the individual it is attacking. Alcohol does not act in the same way on every man who drinks more than is good for him. His speech bewrayeth one man, incoordination of gait another, disturbance of mental functions a third. Lead poisoning in one may produce the symptoms of multiple sclerosis (as in the case I shewed you a few weeks ago), in another those of locomotor ataxia, in a third those of the ordinary drop-wrist. Nor does the toxin of influenza always attack the nerve cells, nor, if it does so, is the neuron affected always the same. These differences, which are very important clinically, probably depend on some inherited or acquired weakness or peculiarity of certain neurons, rendering them more than usually susceptible to the attack of the toxin.

And now, when you come to consider what is to be done by way of treatment in those various toxic forms of nervous disease, one point at once becomes clear. In cases in which the poisoning is still going on you must, if possible, put a stop to that at once. If the drinking water contains lead, that source of danger must be cut off. The man who is being poisoned with alcohol must be made to abstain, the patient suffering from malarial neuritis should be moved to a healthy locality, and the best results in the case of Beri-Beri are obtained when the infected district is forsaken.

These are sufficiently obvious points, and it is equally clear that we should use every means in our power to encourage the elimination of the toxin from the system. In the

case of lead, for example, we do this by the administration of iodide of potassium which, forming a soluble iodide of lead, allows of the ready excretion of the poison by the intestines, kidneys, and skin, while, in order that no re-absorption from the bowel may occur, we see that the patient takes sulphate of magnesia at suitable intervals so that the lead in the intestinal tract may be converted into the insoluble sulphate. When we are dealing with the toxins of fever some good may be attained by stimulating the excretion, particularly that through the skin. In the case of myelitis following an infective fever, for example, profuse diaphoresis induced by a vapour bath may do good, and this form of treatment is specially important in the early stages of multiple neuritis, and in those cases of neuritis which are of rheumatic origin.

But you approach a more interesting part of the enquiry when you come to consider the employment of those drugs which have what may be called a specific action in antagonising certain toxins.

If there were any doubt in your minds as to the possibility of the occurrence of this action, such dubiety would be set at rest most completely by such investigations as shew that at the same time as the clinical toxic symptoms are repressed by the remedy, the pathological appearances are equally and simultaneously held under control. One of the best examples of this kind is furnished by the phenomena of poisoning with Malon-nitril and the control which hyposulphite of sodium exerts on that process.

In 1896 Heymans and Masoin shewed that by means of hyposulphite of sodium the results of poisoning with malon-nitril ($CN - CH_2 - CN$) and other allied nitrils could be successfully combated. More recently the pathological side of the question has been investigated by Goldscheider and Flatau who give their results in a work on the subject published in 1898. Malon-nitril, when administered to animals, occasions pronounced nervous symptoms, convulsions, vaso-motor disturbances, paralysis and death, but even when the paralysis is extreme and death at hand, rapid recovery follows the administration of hyposulphite of sodium. This rapid restitution of function may be traced morphologically in corresponding changes in the cells of the anterior horns of the cord. When

these cells are stained, in cases of malon-nitril poisoning in animals, it is seen that the Nissl's bodies have lost their regular arrangement and contour and are disintegrating, and that the protoplasm lying between has become abnormally and deeply stained. If however hyposulphite of sodium be used as an antidote recovery at once takes place as regards symptoms, and the pathological changes in the cells are found likewise to disappear, though more gradually, morphological restitution having been observed to be complete in seventy-one hours.

This is perhaps as clear a demonstration as you can expect to obtain of the remedial action of drugs in connection with toxic nervous lesions. Others of a similar kind, though less fully worked out, will no doubt occur to you in connection with your pharmacological and therapeutic studies.

But it is not merely toxins formed in the laboratory the action of which on the neuron can thus be antagonised. For, although the pathological demonstration is lacking, we know from clinical experience that the toxins of certain diseases may be controlled in a similar fashion. In rheumatic neuritis, for example, the salicyl compounds act in this way; in malarial neuritis quinine; in syphilitic affections mercury; Syphilis is as you know a very frequent and serious cause of nervous disease, and the proper carrying out of anti-syphilitic treatment is correspondingly important. To this subject, however, we shall return presently.

The toxins of such diseases as affect the nervous system may thus be combated to some extent by drugs prepared in the chemical laboratory. They may also be controlled by substances formed in the laboratory of the body. An animal which has been rendered immune to an infective process has elaborated within its body and furnishes in its blood-serum an anti-toxin which is curative against that infection. The subject of serum therapeutics and protective inoculation is at present limited so far as nervous affections are concerned, to rabies, to diphtheria, and to tetanus, though in the future it is likely to be considerably extended. I do not suppose that anyone now doubts the utility of anti-rabic inoculation, Pasteur's great work, nor can there be any question as to the diminution in the death rate of diphtheria since the serum treatment has come to our

aid. The former under present conditions can only be carried out in such institutions as that of Pasteur in Paris, the latter belongs rather to general medicine than to the therapeutics of nervous disease.

I may, however, delay for a moment to consider the subject of tetanus and its anti-toxin, partly because the question concerns us here, and partly on account of certain recent work, which throws light on the subject.

The changes in the nerve cells of the ventral horns produced by tetanus toxin have been already described and need not again be detailed. When now tetanus anti-toxin is injected in animals it is possible thereby to control not only the symptoms which tetanus toxin has produced, but also the corresponding changes in the nerve cells of the ventral horns. Goldscheider and Flatau, experimenting on animals, have shewn that small doses of the anti-toxin modify the symptoms and at the same time retard the microscopic changes, while with larger doses, especially if these are given early, the symptoms may be made to disappear, and in the affected cells there is a rapid restitution to a normal morphology.

The use of tetanus anti-toxin in the human subject has not been by any means uniformly successful, and this probably because it has not been used early enough or in sufficient quantity. The moment the diagnosis of tetanus is made anti-toxin injections should be commenced, without waiting to see the effect of other forms of treatment.

There are several forms of tetanus anti-toxin in use, that of the British Institute of Preventive Medicine, that of Roux, that of Behring, that of Tizzoni and Cattani, and others. The anti-toxin of Tizzoni, as prepared by Merck, is sold in the dry form and is to be used as follows. The powder is to be rubbed up and dissolved in distilled water in the proportion of 1 in 10. Of this solution a quantity of from 5 to 10 c.c. or more is to be injected hypodermically from a sterilised syringe, this dose being repeated as seems necessary. The anti-toxin of the British Institute is supplied in a liquid form, the dose being from 10 to 20 c.c.

The use of such anti-toxins is not without its own dangers. Instances are on record of nervous lesions following, for example, the injection of diphtheria anti-toxin. Unless we are to suppose that in each case a non-sterile preparation was

employed, we must assume the possibility of the anti-toxin itself acting detrimentally on the nerve cells. And this brings me to a question which has been in my mind for some time. You know that there are certain lesions which are sometimes called "meta-syphilitic," viz. locomotor ataxia and general paralysis of the insane, which undoubtedly in many instances stand in some very close causal relation to syphilis, especially the first, but which nevertheless are hardly if at all influenced by the most careful and prolonged antisyphilitic treatment. Is it possible that these lesions may be the result not of the syphilitic poison itself but of the syphilitic anti-toxin which is formed in the body? There is a suggestion in favour of some such view in a paper published by Babes some months ago, in which he describes and figures the pathological changes which occur in the nerve cells of the ventral horns in rabbits poisoned with large doses of diphtheria anti-toxin. Whether this view of the method of causation of locomotor ataxia and general paralysis be correct or not, it may at anyrate afford you some basis for an interesting speculation. The hypothesis would serve to explain why no antisyphilitic treatment is of avail in these meta-syphilitic diseases. If driven to its logical conclusion it might even suggest the use of the old and discarded method of syphilization, one in which the late Sir J. Y. Simpson strongly believed.

Before we leave this part of the subject I must mention more fully three toxic agents which in respect of treatment demand your special attention. These are: morphia, alcohol, and syphilis.

Opium and its alkaloids are taken, by those who are its slaves, in various ways, but that which is the most frequent in this country is the hypodermic injection of morphia. This habit, which is widely spread, is more common among neurotics than in persons of normal constitution, and although sometimes the desire, in a life of emptiness and luxury, for a fresh sensation is the starting-point of this disastrous habit, the injection of morphia is usually commenced in order to relieve pain, to control chronic diarrhœa or dysentery, or for some similar purpose. Doctors, with their ready access to the drug, pay a heavy tribute to morphinism, as do also druggists and dentists. Of late I have become increasingly impressed with

the necessity of exercising care in giving morphia in private practice. In hospital work, for obvious reasons, the dangers are not so great. But if you give a hypodermic injection of morphia to a delicate woman, for example, for the relief of pain, it is very difficult to resist the appeals she will make to you for its repetition should the pain return. Your hand may easily be thus forced. In chronic disorders not immediately threatening life, and in particular in such regularly recurring painful conditions as dysmenorrhœa, you should exercise great caution in giving morphia. In any case you will do well to retain complete control by invariably administering the remedy yourself. Never should the patient be permitted to use or to possess a syringe, nor should hypodermic medication be entrusted to a nurse. This latter mistake is, I fear, too often made. The use of morphia should be confined as far as possible to two classes of cases—firstly those patients who are suffering from some acute and short affection, such as pleurisy or renal colic, and secondly those dying of some painful malady.

The habit of injecting morphia once commenced can hardly be shaken off by the victim himself. Help is always required. But before speaking of this it may be well that you should have some idea of what the symptoms of morphinism are.

The patient, having used morphia, let us suppose, to check severe pain, is tempted to continue its use after the illness is over. He does this because of the feeling of comfort and well-being which each injection induces. Gradually he increases the daily quantity and presently he finds that he cannot get on without the stimulus of morphia. As the grip of the poison tightens on him the demand of the body for its daily dose becomes more imperious. If the unfortunate morphinist makes a struggle to keep control over the habit, he uses his syringe only at stated times in the day. As the hour of injection approaches he becomes seized with great restlessness. He cannot attend to work, he cannot think save of the one subject,—morphia; and he feels weak and miserable. He has fits of yawning, crouches over the fire, and shivers with a cold perspiration. The moment the injection is taken he passes into euphoria. He becomes a new man, warm, comfortable, alert, bright, ready for mental or bodily work, although not for work of a high order.

The character of the morphinist very rapidly deteriorates and he becomes an expert and plausible liar. Disorderly in his habits, procrastinating, wayward and capricious, the victim of this craving sinks into an utter selfishness.[1]

This first stage of morphinism, which may be called that of euphoria, lasts for a variable time, perhaps for a year or more, its duration depending partly on the individual but chiefly on the amount of morphia which is taken daily. The smaller the dose the longer will this first stage last.

But presently there comes a time when the use of the syringe no longer gives such satisfaction, when under imperious demand from the body morphia is used in increasing doses and with increasing frequency. The tissues of the body then shew more evident signs of suffering from the poisoning. Emaciation comes on, the face becomes sallow and haggard, there are signs of gastric catarrh and there is usually obstinate constipation. The mental functions now shew evident indications of failure, and memory becomes weak and imperfect. The muscular system also suffers enfeeblement and little exertion produces fatigue. During this stage the injections become painful, induration takes place round each prick of the needle, and frequently abscess formation results. Such patients are sometimes so scarred that there remains hardly an area of the skin of normal appearance.

It is important that you should remember that in his struggles to regain mastery over himself, — for most morphinists do so struggle at one time or another,—he usually attempts to compass the diminution of morphia by replacing it with some other drug. Thus he comes to add alcoholic indulgence to morphinism, and if he has resort to cocaine then the last state of that man is infinitely worse than the first.

As to the quantity of morphia which such persons administer to themselves. During the first stage the daily consumption may amount to 3 or 4 grains perhaps. In the later periods 15 to 20 grains is not an unusual daily allowance, and many take quantities greatly in excess of these figures.

There is no doubt that the treatment of a confirmed morphinist is best conducted in a hospital or asylum, or in a

[1] The change in character is, however, not so strongly marked here as it is in alcoholism.

well managed nursing home. To attempt it in the house of the patient is to increase enormously the natural difficulties of the situation. But in any case it is worse than useless to try to break off the morphia habit unless you can secure the due and complete seclusion of your patient under the care of trustworthy nurses. If she is to be treated at home (and the same remark applies to male patients) one of the conditions must be that her relations are not to see her, and that her own servants, whom she might persuade or heavily bribe to bring her morphia, are not to have access to her bedroom.

Whatever be the line of treatment you ultimately adopt you will find it well not to begin that treatment at once, but to keep the patient under observation for a day or two before reducing the morphia. The organs of the body are put under severe strain during the process of suppressing the drug, and it is well that their functions should be got in order as far as may be before that strain commences. Rest in bed, a liberal milk diet, and a calomel purge will all be beneficial, and these preliminary days will afford you a valuable opportunity of stopping alcohol, cocaine, or other drug, if the patient has fallen under such influence. This should be done at once and completely. The daily quantity of morphia is not to be diminished during these preliminary days, but the patient is to be got so far under control by regulating carefully the hours at which the injections are given. During this period also the utmost care must be taken to see that the patient has no hidden store of morphia in his clothes, about the bed, or within any kind of reach. The deceitfulness and clever cunning of the morphinist will elude any but the most extreme and minute precautions.

As to the actual suppression of morphia. This may be done in one of three ways. It may, firstly, be suddenly stopped; secondly, it may be very rapidly diminished; thirdly, it may be decreased slowly and gradually.

The first method, that of sudden and complete withdrawal, brings with it great suffering and a dangerous, sometimes fatal, collapse. It should not be used unless the daily dose of the drug is very small, the habit not one of long standing, and the patient strong.

In the second method, that of rapid diminution, the procedure is somewhat as follows. If, for example, the patient

has been taking 15 grains every twenty-four hours, you will give on the first day of treatment 7 grains in divided doses at those hours at which during the days of preliminary observation he has been accustomed to have the drug. On the three following days he will receive a grain and a half, then only a grain. Thus in some six days the morphia will have been completely stopped.

Great suffering attends this process. The patient becomes restless, then excited, shivers violently, the temperature falls below normal, there is profuse sweating and salivation, nausea, vomiting, diarrhœa, and the signs of more or less severe collapse. Sleep is impossible, and a state of more utter misery can hardly be conceived. These symptoms gradually abate as the days pass, and something may be done to soften their severity while they last. The excitement and extreme restlessness may be somewhat abated by a warm bath, and by large doses, a drachm or more, of bromide of potassium. It is not advisable to use chloral, and certainly cocaine must never be employed, but sulphonal or trional, cautiously given, may help to procure sleep. During the stage of collapse you will find citrate of caffeine useful, especially when given hypodermically, and subcutaneous injection of ether may also be of service. But, if the collapse is severe, you may be compelled to give the patient an extra dose of morphia to tide him over a dangerous moment.[1]

In the third and I think the best method of suppressing the morphia habit, the drug is withdrawn much more slowly and gradually, the process lasting perhaps three weeks or a month, more or less according to the quantity of morphia which has been used. The strain and suffering are considerably less than in the case of the second method, but on the other hand the discomfort is more prolonged. It is best, I think, to make each step in the reduction at intervals of about three days. This allows some sort of breathing space between each strain.

But by whatever method you proceed you should be careful to see that your patient takes plenty of food during the treatment. Milk, raw eggs, strong soups are usually suitable, but

[1] Dr Macleod has recently made use of very large doses of bromide of sodium in treating morphinism in China. He gives the salt in solution in doses of two drachms every two hours for the first two days, and one drachm on the third day.

in some cases the food may have to be peptonised. The use of alcohol should, if possible, be avoided.

As the patient emerges from the treatment and his strength begins to return, he should be sent on a long sea voyage, if that be possible. In any case he will require careful watching for many months until his mental equilibrium is re-established. For at least a year his mental state is not likely to be a thoroughly sane one, and at intervals he will be seized with a craving for morphia or for alcohol. What should be specially taught him is that from time to time, particularly during the night and when the vital powers are at their lowest point, the thought of morphia and its delights will come upon him. This thought must be stamped out resolutely. At first he will experience great difficulty in banishing the idea from his mind, but gradually the power to do this increases, and in like proportion the dangers of relapse lessen. Ultimately, as the years go on, the thought of morphia will occur to him with increasing rarity, and when it does occur will with ease be banished. I attach the greatest importance to this self-tuition. But unless the mind and self-control of your patient have been strengthened by healthy open-air life, this beneficial power of suppressing the thought of morphia will probably not be acquired. Without such power he will readily succumb to temptation, and will then form one of that great number of persons, once cured, who fall back into the cruel arms of the drug.

The consideration of the treatment of chronic alcoholism need not detain us so long as that of the morphia habit has done. In bad cases, undoubtedly, it is best that such treatment should be conducted in those Retreats which are set apart by law for this purpose. Under the Inebriates Act of 1898 there exists the power of compulsion, and it is to be hoped that many inveterate alcoholics may in this way be rescued.

But you will encounter in the course of practice many cases in which it is not advisable or even necessary to insist on compulsory seclusion, not at any rate until some attempt has been made to break off the habit by less rigorous measures. In those cases in which some remnant of self-respect is preserved and some self-control exists, the cure of chronic alcoholism, in a man at any rate, may be accomplished outside of such Retreats. The personal desire to be cured must, however, be

present, or no good or lasting result is possible. It is to be remembered that drinking convivially, even when carried to great excess, is far less dangerous than the habit of secret drinking, which is often so difficult of detection.

Unlike morphia, the alcoholic habit should be suppressed abruptly and at once. Although some depression follows, and even a degree of collapse may take place, these are not for a moment to be compared in severity with those which attend the suppression of morphia. They are not dangerous and do not contra-indicate the total and immediate withdrawal of alcohol. The only exception to be made to this rule is in the case of very weak persons who shew signs of cardiac failure. In such cases it may not be possible to stop the alcohol all at once.

The shock to the system which follows the sudden withdrawal of alcohol is to be combated by frequent feeding and careful nursing, and the sleeplessness by giving if necessary such sedatives as the bromides, sulphonal or trional. It is hardly needful to say that the use of morphia or cocaine is to be avoided.

As the strength of your patient returns, he should be sent on a sea voyage, or should be taken to the country, in each case under proper supervision. In the country he should be encouraged to take sufficient exercise to produce considerable muscular fatigue. This usually at once puts an end to any sleeplessness from which he may have been suffering. But you should see that the exercise he takes is of a kind to interest him and to occupy his mind. Angling, for example, is very suitable, for he who wields a heavy rod by day, is seldom sleepless by night. Golf, or any other open-air pastime, involving muscular work, will do as well.

The main difficulty which you have to encounter is not the breaking off of the alcoholic habit, but the keeping the man straight afterwards. He is surrounded with temptations, and, among his friends who take their wine in proper moderation, he must sit a total abstainer. The moral support of a judicious friend will help him, and what I said to you just now as to the practice of banishing the thought of morphia applies equally to alcohol.

Hypnotism has been made use of to check the desire for alcohol by post-hypnotic suggestion. I have not had occasion

to try this method, but I know that my friend Dr George Kerr has met with considerable success in the employment of hypnotism in alcoholic cases.

Antisyphilitic treatment is the last point to which our attention shall be directed to-day. The poison of syphilis frequently attacks the nervous tissues and produces far-reaching effects. In combating these lesions the antisyphilitic treatment requires to be of the most thorough kind, and it is usually advisable to employ both mercury and iodide of potassium.

Let us take for an example some specific cord affection such as syphilitic myelitis. How are these remedies to be administered in this case? Now, it is no doubt true that the action of mercury can be attained by administration by the mouth. But in doing so, if you are to obtain the full effect of the drug you have to give doses which are very liable to produce gastro-intestinal irritation and salivation. So much is this the case that if you give even so mild a preparation as grey powder for any length of time you have to combine some opium with it so as to control its action on the bowel. This addition of opium is, to my mind, inadvisable, and yet you must secure a thorough mercurial action. I therefore believe that in these cases of syphilis of the nervous system the mercury should not be given by the mouth. Two other methods are open to you. You may have the mercury rubbed through the skin, or you may give it hypodermically. Of these, the method by friction is usually to be preferred.

In such a case, then, as we have supposed, if you resort to the method of inunction you will give directions that from 30 to 60 grains of mercurial ointment be rubbed into the skin daily, a different part of the body being selected on each occasion. The patient may begin, for example, with the right arm, then the left arm, the right thigh, the left thigh, and then *da capo*. A square of linen rag is taken, sufficiently large to cover amply the area of skin to be rubbed, and on it a portion of the quantity of ointment to be used is placed. With this the patient is instructed to rub the skin vigorously, adding from time to time a little more of the ointment until the whole quantity has been rubbed in. This operation should take from ten to fifteen minutes. Thereafter the square of rag is to be laid over

the skin surface, covered with a layer of cotton wool and retained by means of a light bandage. The inunction is to be made at night, and the patient sleeps with the rag and bandage so adjusted. In the morning the vigorous application of soap and hot water will remove any traces of unabsorbed ointment.

In certain Continental watering-places, where the treatment of syphilis is specially attended to, the inunctions are made by means of a glass instrument, shaped like a handle, and bearing on one end a hemispherical surface of ground glass, with which the ointment is rubbed in. The inunctions are made by a skilled rubber, about an hour after the patient has left a warm bath. I think, however, that the method of inunction which I described first is the better for such cases as those we are now considering.

Such inunction as this should be made daily for a fortnight, or if possible three weeks. There should then come a pause of a week, and, if no stomatitis has developed, a new series of frictions may then be entered on. After the second series of inunctions is completed a pause of a month's duration is advisable, after which the treatment should be recommenced. To be complete, these series of inunctions should extend (with intervals of increasing length) over a period of three years. The necessity of taking care of the teeth and gums during such treatment as this is well known to you, and the advisability of using a mouth-wash of chlorate potash.

While I believe that as a rule the method by inunction is to be preferred, there are some cases in which it may be advisable to administer the mercury hypodermically. When the symptoms are severe, and the need for mercurial action is pressing, then the subcutaneous method, which is more rapid and energetic in action than inunction, is to be preferred. It is not, however, without its inconveniences. It is painful, and, if due care is not taken, much induration and even abscess formation may result.

The syringe you use must be carefully sterilized. The needle, which should be of platinum, is to be heated in a flame just before use, and cooled in carbolic oil. The injection is best made in the gluteal region, and the solution should be injected deeply into muscular fibre. The skin is to be carefully cleansed before the operation.

Various preparations of mercury have been made use of for

hypodermic administration. Grey oil has been much used, as well as calomel in vaselin, but neither of these preparations is to be recommended.

The red iodide (mercuric iodide) is frequently employed for injection. With the aid of a little iodide of sodium it is readily dissolved in the proportion of one grain in 64 minims of distilled water. Of this solution from two to six minims may be injected. An even better preparation is that of Panas :—

Mercuric iodide, 0.4 grm.
Sterilized olive oil, 100 c.c.

The oil is purified by washing with distilled water, and, after separating it, is again washed with absolute alcohol. It is finally sterilized. Of this solution 1 c.c. (nearly 17 minims) contains about 4 milligrammes ($\frac{1}{16}$ grain) of mercuric iodide.

Delpech's solution for hypodermic use, which is much employed in Paris, consists of an ammoniated peptone of mercury of the following composition :—

℞		
	Hydrarg. perchlor.	10 grammes
	Peptone (dry)	15 „
	Ammon. chlorid.	15 „

Misce.

This preparation is to be dissolved in distilled water, or preferably in glycerine, in the proportion of 40 centigrammes in 30 grammes.

There is, finally, sozo-iodol-mercury, a preparation which has recently come into some vogue for intra-muscular injections in syphilis. Of this substance 2½ grains are to be dissolved, along with 5 grains of sodium iodide, in 100 minims of distilled water. The resulting solution may be given hypodermically in doses of 10 minims.

During the greater part of this period iodide of potassium should also be given, the dose depending on the individual, but being in any case as large as can be borne. You may begin with 30 or 40 grains in the day, and rapidly increase the dose as far as seems advisable in the particular case you are treating.

In cases in which the iodide has to be administered for long periods, use may be made of a preparation called iod-albacid by its discoverer, Dr Blum of Frankfort. It is an iodine-albumin (analogous to iodo-thyrin), formed by the action

of iodine on moist albumin. When taken internally it readily breaks up, liberating its iodine (of which it contains about 10%), and not producing the disagreeable effects sometimes seen after the exhibition of potassium iodide. Iodalbacid should not be used in cases in which a rapid action is desired. In these, iodide of potassium is to be preferred. But for the more chronic cases it has been found very useful. It is freely soluble in water, but is best given either in cachets or in the form of tablets. The quantity which should be administered daily is from three to six grammes (45 to 90 grains), in divided doses.

CLINICAL LECTURE III

HÆMORRHAGES OF THE LATER MONTHS OF PREGNANCY.—ACCIDENTAL HÆMORRHAGE

Delivered in the Glasgow Maternity Hospital

By ROBERT JARDINE, M.D.,
Physician to the Hospital

WE have now to take up the hæmorrhages which occur in the later months of pregnancy, *e.g.* from the sixth month onwards —the ante-partum hæmorrhages. We have two varieties, viz., accidental and unavoidable. We shall first deal with the accidental. The hæmorrhage arises from the separation of a normally situated placenta, *i.e.* a placenta situated in the uterine cavity anywhere above the lower uterine segment. By the lower uterine segment is meant the part which becomes thinned out during the canalisation of the genital tract. If the placenta is attached anywhere in this lower uterine segment separation of it is bound to occur during labour, and this gives rise to the unavoidable form of hæmorrhage. Such a case is said to be one of placenta prævia, which we shall discuss fully in our next lecture. What I wish to point out to you now is that in both cases the hæmorrhage is caused by separation of the placenta. In the accidental the placenta is normally situated, while in the unavoidable it is in the lower uterine area. In both the blood comes principally from the uterine sinuses, and a small amount from the torn placenta.

Varieties of Accidental Hæmorrhage.—There are two

varieties, viz., external and concealed. The latter is probably the most serious complication we have to deal with in midwifery. With the exception of rupture of the uterus, there is no accident so fatal to the patient. Fortunately, it is comparatively rare.

Accidental hæmorrhage is more frequent in multiparous than in primiparous cases, but it occasionally does occur among the latter. It resembles an abortion in this respect, and in fact it is practically an abortion occurring in the later months. It occurs in the same class of cases and from much the same causes.

Time of occurrence.—It occurs from the sixth month onward to full time.

Ætiology.—The ætiology is then much the same as in cases of abortion. In all the cases I have examined carefully I have found the placenta more or less degenerated. A perfectly normal placenta might become detached as the result of a severe accident, but this is very exceptional. In the majority of cases I believe there is more or less disease of the placenta present, due usually to endometritis. The exciting cause may be direct violence, such as a kick or blow upon the abdomen, over-exertion, over-stretching, such as in reaching something above the head or in hanging up clothes, shock, fright, severe vomiting, severe coughing, and severe straining at stool. In some cases there may be no apparent exciting cause.

For some reason or other then a small portion of the placenta becomes detached, and a utero placental sinus torn through. A greater or less amount of blood is poured out between the placenta and uterine wall. If it is at the edge of the placenta it will quickly find its way down between the membranes and the wall. It may clot there, or work its way down by gravitation until it appears externally. If the amount be very small no harm may result; but it is almost sure to act as a foreign body and set up uterine contractions which will cause more of the placenta to be separated, and, of course, more hæmorrhage. In the concealed form the blood is retained in the uterus and does not appear externally at all, but there is usually a profuse flow of serum which is pressed out of the clots. The blood is said occasionally to burst through the membranes and mingle with the liquor amnii, but I have never seen a case of this kind. In the concealed form the uterus

becomes very much distended, more oval in form, and you may be able to feel masses in it indicating where clots are lying. You will not be able to feel the fœtal parts. The woman will complain of a continuous rending pain, as if her uterus were going to burst. If she is a multipara she will tell you the pain is very different from any pain she had felt in former labours. This is a symptom of the utmost importance, and one to which I wish specially to direct your attention. It is mentioned in text books, but I do not think sufficient stress is laid upon its importance. If the case is at all a serious one the patient will show all the signs and symptoms of hæmorrhage and collapse, which I need not enumerate.

Prognosis.—In the concealed variety the prognosis is exceedingly grave, as, unfortunately, the condition is often not recognised until the patient is collapsed. In the external variety the danger is not nearly so great, as assistance will be sent for early. If the cases of the external form are seen early, before collapse, the great majority should be saved. The mortality for accidental hæmorrhage is said to be 50 per cent. This is far too high, taking all the cases together, but for the concealed variety alone it is not high enough. Very few of them are saved.

As regards the children, in bad cases they are nearly all lost, but in slight cases they may be saved. Many of them are premature. If the placenta is entirely separated the child will be dead. The child's chances then may be said to depend upon the amount of separation of the placenta, and also the ease of delivery. It may be too premature to survive, and at the best is likely to be weakly.

Before taking up the diagnosis and treatment I shall give you notes of two cases, one of each variety.

CASE I.—The patient was a multipara seven months pregnant, attended at her own home. She had been bleeding for sixteen hours before I saw her. She stated that she had been very constipated, and the night previous had been straining very heavily at stool when she suddenly found blood was pouring from the vagina. She said she had very nearly filled the chamber-pot. This was, of course, an exaggerated statement. The bleeding had continued, more or less, ever since. Three hours before I saw her the vagina had been plugged on the supposition that it was a case of placenta prævia; the os was

then about the size of half-a-crown. I found her pulse very feeble and her lips blanched. She was in a state of collapse from hæmorrhage. The os was now fully dilated, the membranes intact and the head presenting. The membranes were at once ruptured and the forceps applied. Delivery was easy. The child was dead. Firm pressure over the uterus immediately expelled three or four large black clots and the placenta, which had been completely separated. A hot douche checked all post-partum hæmorrhage. Ergotin and ether were given hypodermically, and an injection of saline fluid into the rectum and a pint of the same into the areolar tissues of the right axilla. Her pulse, which had been barely perceptible after delivery, quickly improved. She made an excellent recovery.

CASE II.—Mrs E., æt. 41, multipara. This patient was sent into the hospital as a case of placenta prævia. The history given us was that she had begun to bleed about 4 a.m., and that the bleeding had continued, more or less, ever since. The only cause she could give was that she had done a heavy washing the day before. She had been seen a few hours after the onset, and the vagina had been plugged. The plug had been removed twice and a fresh one put in. The third plug was still in.

On admission at 4.15 p.m., twelve hours after the onset, she was perfectly blanched; her lips were of a bluish-white colour and absolutely bloodless. The pulse was 120 and very soft. She continually complained of a rending pain in her abdomen as if she were bursting. The abdomen was very much distended and globular in shape. The fœtal parts could not be palpated. The os admitted two fingers and no placenta could be felt.

She was given some stimulant by the mouth and a saline rectal injection. Champetier de Ribe's bag was inserted and partially filled. In a few minutes it was withdrawn and the os dilated manually until the hand passed. The membranes were ruptured and a foot brought down, and delivery of a premature dead child, which weighed 2½ lbs., quickly effected. The placenta, which had been completely separated, and a very large quantity of clot were at once cleared out of the uterus. During this the uterus was actively compressed, and hypodermic injections of ergotin and strychnine were given. A creolin

intra-uterine injection (115°) checked the post-partum hæmorrhage; in fact there was no blood lost after delivery as, unfortunately, there was none to lose. Another saline rectal injection was given and also one into the areolar tissues under the left breast. She was now practically pulseless. In spite of active stimulation she died in half an hour.

I shall refer to this case when discussing the best methods of treatment.

Diagnosis.—In the external variety there will be bleeding from the uterus. The patient may or may not be having uterine contractions if it is before full time, but they will soon come on. If the hæmorrhage is profuse the pulse will become rapid and weak, and signs and symptoms of collapse supervene. In some cases the amount of collapse will be much greater than the apparent loss of blood accounts for. In such cases there will be concealed hæmorrhage as well, making it much more dangerous. The os may not be much dilated at first, but you will usually be able to get your finger in. The cervical canal will usually be found full of clot, which may easily be mistaken for placenta. You can break down the clot and remove it, while this cannot easily be done with placenta. You will not be able to reach any placental tissue with your finger.

The only condition you will have to diagnose it from is placenta prævia. Mistakes are very frequently made between these two. In both of the cases I have related a mistake was made. Until the os is dilated sufficiently to admit the finger a differential diagnosis may be impossible. If placenta can be reached, that will settle that it is a case of placenta prævia. A boggy feeling in the fornices is also indicative of placenta prævia. You will see it stated that in accidental hæmorrhage there will be no bleeding during the pains as the presenting part will effectually block the passage, while in placenta prævia the bleeding will increase during the pains. In my experience, which has been a pretty large one, you can place absolutely no dependence upon this. In accidental hæmorrhage the contractions will squeeze out any blood which is in the lower part of the uterus and cervix, and, besides, in many cases the presenting part does not block the passage. In a case of lateral or marginal placenta prævia, if the head is well down during the uterine contractions it will effectually plug the passage and prevent any bleeding.

In the concealed variety there may be some hæmorrhage showing, but often there is only a copious serous discharge. The patient will be in a state of collapse. The uterus will be oval in shape and very much distended. You will not be able to palpate the fœtus, but you will often be able to make out irregular masses in the uterus indicating where the clots are lying. The patient will complain of a continuous rending pain in the uterus. Rupture of the uterus gives much the same condition of collapse, but it occurs as a rule in the second stage of labour. In complete rupture the uterus will usually be smaller than it was before, and the presenting part will have receded. In partial rupture the signs and symptoms are almost identical, but it occurs practically always late in the second stage while the hæmorrhage is always in the first, or before labour has set in. Rupture of an internal viscus, *e.g.* stomach or bowel, would give the same collapse. An examination would reveal that the uterus was of normal size and shape.

Treatment.—The proper treatment of each case depends upon the conditions present. To lay down one hard and fast rule of procedure is absurd. Let us first consider the external variety. We will first suppose a case where the hæmorrhage is not very great and the uterus is not distended. If the membranes are ruptured and a tight binder applied this is usually sufficient provided contractions are occurring, but you must watch the pulse carefully for fear of concealed bleeding going on. If the uterus does not contract when the liquor amnii flows away, you can easily see the pressure inside the uterus will be lessened and bleeding encouraged. If the external hæmorrhage continues or there is evidence of internal hæmorrhage, steps should at once be taken to hurry dilatation and delivery. The dilatation may be effected by means of Barnes' or Champetier de Ribe's bags, or manually. As soon as the os is sufficiently wide, turn by either method and bring a leg down. Keep up active stimulation of the uterus by kneading it to encourage contractions. If the os is not sufficiently dilated to allow of the head passing easily, beware of dragging it through forcibly or you may rupture the cervix and add a very serious risk. In some cases forceps may be used, but as a rule turning is the better method. As soon as the child is born the uterus must be actively com-

pressed, and in most cases the hand should at once be introduced into the uterus to clear out the clots and placenta. A very hot douche (120°) should be given at once, and ergotin hypodermically. These active measures require to be adopted to prevent post-partum hæmorrhage, which is apt to occur. If the case has been a severe one, saline fluid (one drachm of common salt to a pint) should be injected either directly into a vein or into the areolar tissues of some part of the body. It can also be given into the rectum. The patient should be freely stimulated with brandy, ether, or strychnine. In a very bad case it would be well to transfuse before attempting delivery. I shall deal with the methods of transfusion and treatment of collapse from hæmorrhage when discussing post-partum hæmorrhage.

I shall now give you the history of a case which occurred in my hands last year. It illustrates the serious risks you run in hastening dilatation and delivery in any case.

CASE III.—Mrs T., æt. 27, ii-para. This patient had been delivered by me on 1st October 1896 of her first child by craniotomy. The cord was prolapsed and pulseless. Her pelvic measurements were as follows: — Interspinous, 10¼ inches; intercristal, 10½ inches; external conjugate, 7 inches; diagonal conjugate, 3⅞ inches. The true conjugate would be about 3¼ inches.

According to instructions, she came back for induction when seven and a half months pregnant. She was admitted on 1st October 1897. A bougie was passed into the uterus, and the vagina plugged the evening of admission. The plugs were removed sixteen hours later. The os was the size of a shilling. During the next twenty-four hours not much progress was made. On the evening of the 3rd October I found the os would admit two fingers and was fairly dilatable, so I determined to put in a Champetier de Ribe's bag and leave it in until the os dilated. The bag was easily introduced without giving chloroform, the patient lying on her left side. Warm carbolic lotion was pumped in through a Higgenson syringe, and before the bag was nearly full the patient suddenly became blanched and the pulse grew very weak. The syringe was detached from the bag and the fluid allowed to run out; but only a little came through the tube and it was blood-stained, but a gush of blood-stained fluid came from the vagina. The

bag was withdrawn at once, when there was a tremendous gush of blood. The bag had a rent nearly an inch long in its side. As the uterus showed no indication of contracting, and the hæmorrhage continued, Dr Black agreed that I ought to dilate manually and turn at once. This was easily effected, as the cervix yielded readily to my hand. The body was drawn down and the arms freed. The uterus was still very flabby, and I was afraid that internal bleeding might continue, so I delivered the head at once by suprapubic pressure combined with not very great traction on the body. The child was alive, and weighed 6¼ lb. The placenta, which was partially in the vagina, was removed. It had been attached low down and was very soft, evidently fatty. A hot intra-uterine creolin douche (120°) was given, and the uterus, which had been very flabby, soon contracted firmly. A hypodermic injection of ergotin (3 grs.) and another of ether (20 drops) were given, and a pint of saline solution by the rectum. The cervix was torn considerably, but the hot douche seemed to check the hæmorrhage. The patient had rallied and said she felt better. Her pulse was 92, and of fair strength. She was then made comfortable and a firm binder put on, but in about ten minutes, perhaps half an hour after delivery, her pulse became very feeble (120), and she looked decidedly blanched. Bleeding had recurred, evidently from the cervix, as the uterus was fairly firm. The foot of the bed was raised at once, and 2 oz. brandy and 2 oz. water injected into the rectum. Another hot douche (120°) was given by me, while, at the same time, Dr Webster opened the median basilic vein and transfused 6 pints of saline fluid. The pulse improved for a time. As the hot douche failed to check the oozing, I plugged the cervix and vagina with Iodoform gauze. Hot applications and stimulants were used freely, but she gradually sank, and died two and a half hours after delivery.

We got permission for a *post-mortem*, but, unfortunately, the body was removed without the resident's knowledge before we could have the examination made.

I show you the bag and you see the tear in it. Two other of these bags have burst in my hands, but, fortunately, the others burst in the vagina. In this case the burst was high up, and the fluid separated the placenta, which was very friable and situated low down. The bag is a large one, and from the point

which was in the os to the top it measures fully 4 inches. As it distended the membranes would be stripped off the uterine wall and be pushed up before it. The lower edge of the placenta may even have been slightly separated by the strain on the membranes before the bag burst. Of course that had nothing to do with the tearing of the cervix except that it forced me to deliver by *accouchement forcé*. If I had delayed the delivery of the head and sacrificed the child, the mother might have been saved. One can always be wise after an event. This case illustrates the grave risk incurred in rapid delivery.

Herman, in the last sentence in his book on "Difficult Labour," in speaking about the danger of rupture of the uterus from the use of Champetier's bag, says that "no case has been recorded in which either this or any other bad effect has been produced by it." I am sorry to have to record a case which contradicts the latter part of this statement.

This bag seems to be made of some preparation of rubber. The one I have for private use is made of silk, and sewed. I do not think it would burst, but it is very difficult to render such a bag aseptic. These rubber ones, I imagine, have been made so that they may be easily rendered aseptic. I shall certainly never use one of them again. The silk one I have found does well.

The methods of treatment I have given you are the ones I have found most efficacious, but you will find a very different method described in Jellett's "Short Practices of Midwifery." In the preface to that work, Smyly says: "In the first two years of my mastership I treated all serious cases of accidental hæmorrhage by rupturing the membranes, and, if that did not prove effectual, delivery was effected by version and extraction or perforation. The results were so bad that I resorted to plugging in all cases of external hæmorrhage in which the membranes were intact and labour pains absent or feeble—that is, in the great majority of cases—and with excellent results. The fear that an external would be converted into an internal hæmorrhage proved groundless." The case of Mrs E. which I have already related to you shows that this fear is not groundless. It began as an external form but was converted into an internal by the plugging.

Jellett strongly advocates the plug. He says: "If the

blood cannot escape, then it must cease flowing as soon as the cavity is full. There is no room for any considerable quantity of blood to escape into a healthy uterus occupied by an unruptured ovum. If a vessel rupture in such a case and no blood escape through the os, the pressure in the uterus would rapidly become greater than the blood pressure, and the hæmorrhage would cease. If, on the other hand, the uterus be unhealthy and dilate before the blood pressure, then the amount of the hæmorrhage is only limited by the dilatability of the uterus." This is all true enough, but the unfortunate thing is that we rarely have to deal with a healthy uterus. If it were healthy the placenta would not separate except under very exceptional circumstances. The placentæ in the cases which I have examined have all been in an unhealthy condition. Jellett says the hæmorrhage is primarily due to an endometritis. A uterus with endometritis is not a healthy one.

Nature's method of checking hæmorrhage is not by pressure, but by contraction and retraction of the uterine muscular fibres. The only way to get that is by emptying the uterus, a practice I have always carried out when any active hæmorrhage was going on. In a large number of cases of the external variety, the only one I have lost was that of Mrs T. just related, and it was a very exceptional one. I am afraid I was too anxious to get a live child in that case, and it was of course complicated by a considerable contraction of the pelvis. Rupturing the membranes may suffice when active contractions are going on, but I would never trust to it if there had been much hæmorrhage. If hæmorrhage is going on, I think the best treatment is to dilate and deliver, with due precautions not to lacerate. If the hæmorrhage has ceased and the patient is not collapsed, we may wait and watch her. If she is very much collapsed, we should stimulate her and give a saline injection first before delivery, as the shock of the delivery may prove fatal even without any post-partum bleeding. The treatment of the external form is comparatively simple, but in the concealed we have a much more serious difficulty to face.

Treatment of the Concealed or Internal Variety.—Jellett says: "The only treatment which is of any avail in these cases is the *accouchement forcé*, or Porro's operation." The former I have tried, and I must confess the results have

not been encouraging. Rupturing the membranes has been advocated, but this I consider dangerous, as the uterus is paralysed and will not contract so that the escape of the liquor amnii makes more room for blood to be poured out. If *accouchement forcé* is decided upon, the patient should first be freely stimulated and given a large injection of saline either into the areolar tissues or directly into a vein. As soon as the child is delivered the uterus should be emptied of the placenta and clots, and every effort made to get it to contract by hot douches, ergotin hypodermically, and firm suprapubic pressure. In my lecture on post-partum hæmorrhage I shall deal with the after treatment.

Porro's operation I have not tried, but it has been done with success. In an hospital it could be adopted, but in private work I am afraid one could hardly do it. If I have another case like that of Mrs E. I shall try it, after giving a large saline injection.

NOTES ON EYE INJURIES FROM STEEL AND STONE

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THE subject of eye injuries is one of some interest and importance to the general practitioner. He is constantly being called upon to treat cases of that nature, especially if his patients include workers in iron and stone. Most of such cases are of a trivial nature, but a few are fraught with serious danger, and it is of the utmost importance that the medical attendant should be able to recognise and if possible treat those cases for himself when the services of a specialist are not available.

The following notes are based on a large number of cases seen by me at the Aberdeen Royal Infirmary and later at the Ophthalmic Institution, when acting as assistant to Dr M'Kenzie Davidson, and in my own practice.

In a town like Aberdeen, where there are nearly 3000 iron-workers and about 6000 stone-workers, eye injuries are of daily occurrence. These workmen are constantly exposed at their work to a scattered fire of stone and steel particles,

more or less minute, which fly off at a high velocity from their own and their neighbours' working materials, and, as almost invariably no protective glasses are worn, the eyes of those within range, so to speak, are frequently being struck by the flying particles. Injuries are thus caused which may be classified in something like the following manner:—

1. "Fires" or foreign bodies embedded superficially in corneal or conjunctival epithelium.
2. Foreign bodies embedded deep in cornea.
3. „ „ in the anterior chamber.
4. „ „ in the lens substance.
5. „ „ in the vitreous.
6. Eye injuries without lodgment of foreign bodies.

1. "Fires"—as the workmen call them—are simply very small particles of stone, steel, or other foreign substance embedded slightly in the corneal epithelium and causing more or less pericorneal injection and pain in the eye. The vast majority of eye injuries belong to this group, and they are of trivial importance if the foreign bodies be carefully picked off the cornea with an aseptic needle or other similar instrument. But generally the foreign body is removed by a fellow workman, who is known as the "skilly" man of the yard for this purpose, and he uses a common pin or the point of a penknife, which he first cleans (?) by moistening it with saliva and wiping it on his sleeve! If the patient be young and healthy, his cornea will usually be too resistant a medium to form a suitable soil for the growth of the micro-organisms that must necessarily be grafted on to it during the operation, and the abrasion made heals up quickly, but if the resisting powers of the patient be lowered in any way, or if the organisms on the pin be unusually virulent, or if the tear duct of the injured eye be blocked causing epiphora, then the abrasion on the cornea immediately becomes septic, and a big suppurating ulcer, sometimes ending in total destruction of the eye, results. Sometimes the "fire" lands on the conjunctival surface, and when that is the case, there is, as a rule, much less irritation than when the cornea is affected, in fact the foreign particle may stick in the conjunctiva and become encysted there without the patient suffering any discomfort. Fires themselves are rarely septic, because they are generally hot

at the moment they leave the chisel or stone, the heat being derived from the impact of the tool producing their separation. But those "fires" however that are met with in comb-workers, and which are due to particles of emery powder flying off from the lathe on which the combs are being polished, are very often intensely septic, and the patient comes to us with a typical suppurating corneal ulcer, having a "fire" in the centre of it, the septicity existing although the skilly man has not treated the eye. Sometimes the "fire" gets swept up under the upper eyelid, and gets embedded in the epithelium on its inner surface. The pain and irritation is as great here as when the fire is corneal, and the pericorneal injection is quite as marked. In those cases the appearances are usually those of a corneal "fire," except that no foreign particle can be detected on the cornea, but on everting the upper lid the offending mote will almost always be found adhering lightly to the palpebral conjunctiva about the middle of the lid about $\frac{3}{16}''$ to $\frac{1}{4}''$ from its margin.

2. Under the second group might be placed those cases where the foreign particles are embedded more deeply in the corneal substance than is the case with "fires." The foreign body in such cases is generally a sharp angular scale of metal flying with great velocity and cutting right into the cornea. The removal of such particles is often a matter of great difficulty, as their sharp edges get entangled in the corneal fibres, and if care be not taken in picking under them the needle may perforate the cornea, or the steel particle may be pushed into the anterior chamber from which its extraction may be extremely difficult, and in some cases impossible.

3. Foreign bodies in the anterior chamber form another group of these cases. Generally they are scale-shaped bits of steel similar to those found deep in the cornea, but which have struck that part of the eye with sufficient force to cut their way right through its whole thickness, and have entered the aqueous chamber. If the momentum of the particle be just sufficient to carry it through the cornea and no more, the foreign body will sink down to the lowest part of the cavity and get caught in the angle between the iris and cornea, or it may still have enough force to cross till it strike the iris or lens where it is arrested and can be easily seen by a skilled observer.

4. Cases in which steel particles have penetrated the lens substance form a distinct group by themselves. Within an hour or two after the accident by which the lens is injured and a foreign body lodged in it, the crystalline substance becomes rapidly milky and cataractous. Occasionally, however, if the particle be very minute, the microscopic puncture it makes in the anterior capsule of the lens seems to close at once, preventing the soakage of aqueous into the lens. The crystalline substance remains clear for a long time, often weeks and even months, and consequently a good view of the particle can be obtained long after the injury. It is very interesting to note that a piece of steel, if it be aseptic, can remain in a lens for years without giving rise to any irritation in the eye or any further change beyond the production of cataract.

5. Foreign bodies in the vitreous form perhaps the most interesting group of all. In such cases the particle, generally of steel, strikes the cornea with great force, goes right through it, across the anterior chamber, through the lens or iris or both, and into the vitreous humour. If the foreign body have still some of its momentum left, it will carry right across the vitreous till it strike the retina and choroid behind, or even go through the sclerotic and out into the orbit beyond. The wound of entrance is quite as often on the conjunctiva and sclerotic as on the cornea, and in such cases the lens and iris of course escape injury and the foreign body passes directly into the vitreous chamber.

6. The last group of cases I would mention comprises those eye injuries due to blows from fairly large chips of stone or iron, without lodgment of the chip in the eye. The injuries vary in severity from the slightest corneal, conjunctival, or palpebral abrasion, to the severest laceration of the bulbus and its appendages.

In dealing with any case of eye injury, no matter how apparently trivial, the first and most important question to be settled is whether or not a foreign body is lodged on or within the eye. If there be a bit of metal inside the bulbus it must be got out otherwise the eye is almost certain to be lost, and not only that, but there is a great risk of the other eye being ruined by sympathetic inflammation. Therefore it is essential to examine every case carefully and systematically, bringing every part of the eye under minute observation. By the

method of oblique focal illumination with an ordinary hand-lens of about 3″ focus the conjunctiva, cornea, iris, and anterior part of the lens are illuminated, and the slightest scratch, wound, or foreign particle can be easily seen. Then by direct ophthalmoscopic examination the lens, vitreous, and fundus can be thoroughly explored and any abnormality at once detected. As the lens becomes rapidly opaque in cases where it is wounded it is obviously necessary to see and examine the case within an hour or two after the accident, if anything like a satisfactory view of the vitreous chamber is to be got. In the first group of cases I have mentioned—that of "fires"—oblique illumination at once shows a brown or black speck on the corneal or conjunctival surface. Anæsthesia of the eye surface is obtained in a minute or two by dropping on to it a few drops of a 3% solution of cocain hydrochlor., in boracic acid lotion (saturated); then the foreign body can be easily picked off by an aseptic needle or, if it be resting lightly on the corneal epithelium, it can be brushed off by a bit of wet cotton wool on a probe. When the foreign body is deep in the cornea it is easily seen by oblique focal illumination, but its removal is often a matter of considerable difficulty. Sometimes it can be picked out of its bed easily enough by a sharp needle, but it is generally wedged in amongst the corneal fibres and won't move. Then its bed has to be cautiously enlarged by a Græfe's knife or cutting needle to release it, and sometimes the electro-magnet has to be used to dislodge it. The great danger is, of course, the accidental pushing of the particle through the cornea into the anterior chamber where it might easily be lost in the angle between the iris and cornea and be a source of serious mischief to the eye. To avoid such a mishap in cases where the steel particle is almost through the cornea, it is advisable to pass a broad cutting needle or spade-knife into the anterior chamber entering at the side of the cornea and crossing behind the foreign body. By holding the knife so that its blade is brought against the posterior surface of the cornea at the seat of injury the operator gets a firm floor to work on, and he can use the corneal needle with greater freedom, there being no danger of dislodging the particle backwards. After such an operation the eye should be tied up and kept at rest, atropine drops being instilled two or three times daily for some days till the corneal irritation has subsided and the wound

healed. As I have already indicated, the "fire" may get under the upper eyelid, and hence it is advisable in all cases of corneal irritation and photophobia with pain as if something were in the eye, to evert the upper lid and look for the particle there, when it can't be found on the cornea. The offending speck rests very loosely on the lid surface and can be easily brushed off. When the foreign body has had enough force to carry it right through the cornea and into the anterior chamber oblique focal illumination shows generally a minute linear scar on the cornea, as the particle is almost always a sharp scale of steel or iron, which can be seen resting, as a rule, on the iris. The eye is injected and painful, and the iris is engorged. A case such as this might easily be mistaken for one of simple corneal abrasion without deeper injury, for the steel particle on the iris very often looks exactly like a pigment spot of iris, but the steel speck will move at once if a magnet be held near the eye. The removal of a piece of steel from the iris is effected by the aid of the electro-magnet, the point of which, carefully disinfected, being inserted through a small corneal incision made with a broad knife not too close to the corneal margin, and passed right over to the foreign body. When the electric current is "made," the steel particle adheres to the magnet tip and is gently piloted out. Sometimes the particle gets embedded in the meshes of the iris, and will not yield to the magnet. The simplest way in such a case is to excise a bit of iris including the steel, and treating the eye afterwards as for ordinary iridectomy. If the foreign body be resting on the anterior capsule of the lens, it is best removed by the magnet through a suitable corneal incision. In cases where the foreign particle in the anterior chamber is stone or brass, the magnet is, of course, useless. Fine forceps inserted through a corneal incision so as to seize the particle should be used. Unfortunately eye injuries like this from stone or brass are much more liable to be followed by septic infection and suppuration of the eyeball than those caused by steel. Generally after the successful removal of a bit of steel from the anterior chamber the eye quietens down in a day or two, and recovers with good vision. In the fourth class, where the foreign body is embedded in the lens substance, oblique focal illumination will reveal it before the crystalline substance has become opaque. In such cases it is best to keep the iris dilated with atropine and give the

eye absolute rest. If the pericorneal injection subside, as it generally does, the foreign body should not be disturbed till the lens be quite opaque (perhaps months afterwards). Then if the particle be steel it can be removed by the electro-magnet through a corneal incision and the lens matter evacuated after it. If the particle be brass extract the lens *en masse* as in the ordinary cataract operation, and the foreign speck will usually be carried out along with the lenticular substance. The eye is then treated as for ordinary cataract extraction.

5. When the steel has lodged in the vitreous, focal illumination will reveal either a simple wound in the conjunctiva with perhaps a black tag of choroid (easily mistaken for a foreign body) and a bead of vitreous protruding from it; or if the track be through the cornea, we may see the linear scar there, a wound or notch in the iris and a faint line on the anterior capsule of the lens, a fainter hazy track through the lens, and a slightly more distinct mark on the posterior capsule of the lens. Ophthalmoscopic examination will show the corneal and lenticular wounds as black marks against a red background, and the three will be in line. Then somewhere in the vitreous chamber the foreign body itself or a mass of blood clot will at once be seen, black distinct and movable, against the red fundus. If the magnet be now held near the eye and the current be "made" and "broken" whilst the observer looks with his ophthalmoscope, the black mass in the vitreous will be seen to move unless there be too much clot obscuring the steel. If the steel be embedded in the retina and no hæmorrhage exist, it quickly becomes enveloped in a whitish grey exudation; but if the magnet used be powerful enough, even that will be seen to move if watched carefully enough. The removal of these particles from the vitreous can only be managed by inserting the magnet point through a small radiating incision in the sclerotic somewhere near where the foreign body is supposed to be. Hardly any vitreous is lost if the operation be carefully done, and a fairly useful eye may be the result, especially if the steel have entered through the sclerotic and left the lens untouched; but even should the lens be wounded and become opaque, fairly good vision may be obtained by a subsequent needling or extraction of the opaque lens substance. But in all cases of removal of foreign

body from the vitreous, a very guarded prognosis should be given on account of the subsequent tendency of the vitreous to degenerate and the retina to become detached. If it be certain that a foreign body exists within the eye, and if it cannot be got out, then it is safest to remove the eye to obviate the risk, which is generally considerable, of sympathetic inflammation in the other eye.

6. In cases where the eye is wounded without lodgment of any foreign body within it, treatment must be adopted to suit each case. An important type of case belonging to this group is that in which there is a suppurating ulcer of the cornea with pus in the anterior chamber (hypopyon), as the result of a corneal wound that has become infected with septic organisms. The infection may be from a septic instrument used in picking off a fire, or it may be from septic matter on the chip (generally of stone) that had struck the eye, or again it frequently comes from a mucocele in connection with the injured eye. In all cases of septic corneal ulcer the tear duct should be examined, and if there be any suspicion of lacrymal obstruction, treatment should be adopted to put that right. If a mucocele exist and be allowed to remain in a case of septic ulcer, the eye is almost certain to be ruined.

Treatment in such cases consists therefore in attending to the tear duct—probing and syringing it if it be obstructed—free irrigation of the conjunctival sac every hour or two with 1-2000 formalin solution or 1-8000 corrosive sublimate lotion, dusting in of iodoform over the ulcer and the instillation of atropine to prevent iritis. If the ulcer continue to spread, the electro-cautery must be used to freely cauterise it and this will generally arrest the destructive process.

In cases of laceration of cornea with prolapse of iris, the wound should be freed from the iris tissue, cleaned and irrigated with formalin or sublimate lotion, atropine drops instilled, and iodoform dusted in as before.

Wounds of the eye affecting the ciliary body are very liable to be followed by sympathetic ophthalmia. Such cases must be treated as above and carefully watched. If there be persistent redness and tenderness about the ciliary region, even although it be certain that no foreign body lies within the eye, the eye should be enucleated to save the other one. These cases are a source of the greatest anxiety to the surgeon for,

being anxious to save a damaged eye, he may delay enucleation too long. Each case has to be judged by itself and the risks attending the attempt to save the eye should be pointed out to the patient.

I have to thank Dr M'Kenzie Davidson for his kindness in allowing me to make use of notes of the cases treated by him and those I treated for him at the Royal Infirmary and Ophthalmic Institution.

PERFORATING ULCERS OF THE FOOT

By G. HALLEY, M.A., M.B., C.M.,
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THE three cases which I wish to bring before the meeting are[1] patients who have come to the Surgical Outpatients' room of the Infirmary suffering from one or more ulcers of the feet, which they stated had existed for a longer or a shorter time, and would not heal. In all they had followed callosities, and had gone on increasing: in two of them they were painless.

In all three there was a certain amount of anæsthesia, and a varying amount of thickened epidermis. In none was there any affection of central nervous system. In one was there a history of peripheral neuritis.

They were treated with rest and antiseptic treatment, but the ulcers recurred or refused to heal, so nerve stretching was resorted to, with the afternoted result.

[2] G. M., aged eighteen, an apprentice joiner, has never had any illness since childhood, feels perfectly well, is troubled with acne of the face. The rest of the family are healthy, father and mother both alive and well. His mother's father was troubled with what was called an open sore on the sole of one foot for several years before his death at sixty.

[3] A cousin of this lad's mother has had repeated operations for intractable ulcers, commencing on his feet, and when last seen by me had an ulcer on the stump of his left leg.

This lad, about whom I wish to speak to you, feels perfectly able for work, is an intelligent fellow, and came to the Surgical Outpatient room in October 1896 because he had an ulcer on

[1] Read at the meeting of the Forfarshire Medical Association in March 1899.
[2] Case reported up to date in *Scottish Medical and Surgical Journal.*
[3] Case reported in *Scottish Medical and Surgical Journal* for April 1898.

the sole of his left foot which he could not get to heal. It had existed for four months following a corn which had been present for twelve months previous to that time. He had been in the habit of paring this corn every time he washed his feet, and four months before being seen by me he first noticed after doing this a watery discharge. This, he said, had continued, and the opening had been getting larger. It had never given him any pain. On examination in October 1896 there was noticed at the head of the second metatarsal bone of the left foot a round shallow ulcer with undermined edges of thickened epidermis, and a watery discharge exuding from it. It was painless to touch, and there was anæsthesia round the ulcer, but nowhere else, though sensation seemed impaired all over the foot. The whole foot was covered with a clammy perspiration.

The right foot was unaffected, having no anæsthesia nor clammy perspiration present in it. Under the usual antiseptic treatment, and as much rest as an outpatient at the Infirmary could get, it improved, and he returned to his work, only to find it recur in four weeks.

In May 1897, eight months after I had first seen him, he was admitted to the Infirmary, and I amputated the second toe of the left foot, with the head of its metatarsal bone, including the ulcer in the incision, also cuttting down on the posterior tibial nerve behind the internal malleolus. The nerve, which was found to be thickened, was stretched pretty vigorously.

The ulcer had perforated the joint, but there was no carious bone. While in the Infirmary no signs of any constitutional trouble was discovered.

On July 10th, two months later, he said he had much more feeling in the foot, and had noticed it did not perspire so freely.

In September 1897 a hardness was noticed in the cicatrix on the sole of the foot.

In November 1897 there was an opening in the hardness; he was ordered to wear an extra sole with a hole in it opposite to the cicatrix, and dust the part with boracic lime and salicylic acid powder.

From this time on the ulcer gradually developed and extended, till it was in May, twelve months after the nerve stretching, just as it had been before that operation.

In this month, May of last year, nerve stretching was repeated and the ulcer excised. The nerve was found *much thicker* than at the previous operation. He left the hospital with the foot absolutely whole, but some slight thickening at the lower end of the incision which showed, in July, a shallow ulcer. He continued at his work, having his foot dressed once a week with a saturated solution of salicylic acid in glycerine and a plug of gauze in the ulcer, with a poroplastic shield on the sole.

In December of last year he had to knock off work again on account of cellulitis of the foot. But now, February, the foot is absolutely whole, and he is having the salicylic dressing and is working once more.

CASE II.—J. F., aged thirty-eight, a cabman—a less favourable case, perhaps, for illustrating the effect of this treatment — as he, like his brethren, had been given to alcoholism.

In 1894 he was laid up with paresis of right arm and right leg. His wife says that at that time he had been drinking pretty heavily. Otherwise he has had no illness.

His mother's brother has been in the Edinburgh Infirmary for what, from the description, was a perforating ulcer which improved while there, but has since been as bad as ever.

On examination, when first seen by me at the outpatient room, he had a circular ulcer on the sole of the right foot over the second metatarsophalangeal joint, shallowed with edges of thickened epidermis, watery discharge, anæsthetic area for about $\frac{3}{4}''$ round and over the thickened epidermis. When he walks much the foot swells. It perspires fully more so than the left.

On January 23rd 1898 the ulcer was excised and wound left open and the post tibial nerve stretched.

He afterwards returned to work and his alcohol, though not in such quantities as before, and in April the ulcer was seen to be quite whole, but in May, four months after the operation, there were signs of recurrence which proved to be the case in June, six months after operation, and on the 8th of October last he was admitted to the Infirmary where I amputated the second toe and excised the ulcer, saturing the raw surfaces of the wound together.

Before dismissal in four weeks he had a dressing of salicylic

cream applied, and was allowed up with a poroplastic sole. Every time the salicylic dressing is applied, which is now once in ten days, any thickened epidermis is removed. He has now been at work fourteen weeks and everything is looking well, and he says the foot has not felt the same for a considerable time. He is also, I may say, keeping away from alcohol.

He has also a perforating ulcer of first toe of left foot which he dresses with moist dressing, but it never keeps him off work. It has existed off and on for five years. It was scraped at the last operation.

February 22nd. Foot still quite whole, even though he has returned to his bibulous habits.

CASE III.—J. M., aged fifty-two, coalman.

There is nothing to note in his family history; parents healthy. None of his relatives have had similar trouble.

Patient himself is perfectly healthy but for his feet; is a total abstainer; is rather a dull, stupid sort of man, not very careful about cleanliness. It is difficult to persuade him to do anything for himself.

First seen by me twelve months ago last December complaining of sore feet, with pain and tingling in his feet. On removing the dressing there was a foul-smelling odour from ulcers on both feet. The great toe of the right foot was absent, having been amputated seven years ago in Edinburgh Infirmary for what, from his description, was a perforating ulcer. The other toes were stunted and deformed; on the under surface of the fifth toe there was an ulcer with thickened epidermis and also one on the sole of the right foot and on the sole of the left foot opposite the second metatarsophalangeal articulation. Both feet, being very much swollen and inflamed, were wrapped in a moist dressing, and he attended the outpatient room off and on for three months, during which time the ulcers improved considerably.

In March 1897 he was admitted to the Infirmary, and both post tibial nerves were stretched. Both nerves were very much thickened, the right more than the left (the ulcers had existed longer on the right). The ulcers were scraped and a moist dressing applied to them.

The fresh epidermis which grew very quickly, heaping itself up, was cut away at each dressing to enable ulcer to heal from the floor.

In a month the ulcer on the left foot was whole and uncovered with thickened epidermis. He dressed the ulcers on the right foot at home and rested in bed, but when seen last September having been working, as he said, at a lighter job, the ulcer on the left foot had reappeared and the two on the right foot had extended.

He was seen by me three weeks ago last Sunday, and his feet were very much better than when I saw him first. There were two ulcers, small, with thickened epidermis on the right foot, and none on the left foot, but plenty of thickened epidermis.

I did not expect very much improvement in this case from the long duration, but there has no doubt been considerable improvement, probably to a great extent due to his taking more care, or to his change of occupation, possibly it was to some extent due to the nerve-stretching. He is now dressing them with salicylic acid and glycerine.

Very few cases have been published where an opportunity has been obtained of examining the nerves, but in 1879 Savory and Butlin published jointly five marked cases, in two of which they examined the nerves after amputation high up, and they found, on microscopic examination of the nerves, an increase in the connective tissue in the nerves, causing in one case complete obliteration of the smallest nerve fibrils in places. The nerve affection was found to have extended a considerable distance up the leg. These two observers found the ulcer to recur in the stump sometimes after amputation. The explanation of that is, I think, that the amputation was not done above the limit of nerve affection. I know of one case where it has ceased to recur in the affected limb after amputation.

Dr Rake, Medical Superintendent of Trinidad Leper Asylum, in the *Lancet* in August 1887, wrote that he had stretched the great sciatic and external popliteal nerves for perforating ulcers in leprosy with improvement, but was not at that time prepared to say from his experience that it was the treatment to adopt, but he felt justified in saying that amputation should never be thought of till nerve-stretching and free incision of the ulcer had been tried.

Another writer in the *Lancet* of 1887 recommended amputation beyond the zone of anæsthesia, but this, to my mind, is not a sufficient indication of the nerve affection.

Dr Rake seems to have become dissatisfied with nerve-stretching, as in 1890 he published a series of cases in which he had got good results from amputation and dividing all the tissues from behind forwards through the ulcer to the dorsum of the foot.

In 1895 Chipault, of Paris, published five cases treated with good results by nerve-stretching.

In 1896 Thomson, of Edinburgh, published one with good result.

In 1897 Chipault published fourteen cases, of which twelve, he says, have been successful and only two unsuccessful. He, in addition to nerve-stretching, scrapes the ulcer. He had done in nine cases at the junction of internal and external plantar nerves.

Erichsen, in his Surgery of 1888, says the treatment for perforating ulcer of the foot consists in amputation above the area of anæsthesia of foot, and that in some cases the sore can be made to heal by thorough scraping with efficient antiseptic treatment, but relapse, he says, almost invariably takes place, rendering amputation necessary.

Bowlby, in Treves' System for 1895, seems quite satisfied with antiseptic treatment, rest, and a perforated sole to the foot, but that constant care is necessary to keep the foot sound. Amputation, as routine treatment, is uncalled for and unsatisfactory, as the ulcer often recurs in the stump.

I do not think that, even with constant care, you will keep the foot sound in cases where there is no definite cause which you can treat for the neuritis being present as alcohol in Case II. If you resort to amputation you simply cause another part of the foot or leg to be exposed to pressure, and the ulcer will recur in another part of the foot or in the stump of the leg if you have not been fortunate enough to do the amputation above the seat of nerve affection.

The difficulty, it seems to me, is to diagnose the limit of nerve affection, and to persuade the patient to submit to amputation through the leg simply for an ulcer on the sole, though Savory and Butlin published one case where they were fortunate enough to obtain this permission, with the result that the ulcer did not recur. I cannot find the duration of the ulcer in Chipault's cases, but I should think that it was short, and that they were diagnosed and treated early, or he would not

have obtained such results from nerve-stretching so close to the ulcer. Perhaps it might be a good thing in cases of some duration to stretch the nerve supplying the affected area in more places than one.

Another difficulty in the treatment of these cases is that of keeping the patient at rest a sufficiently long time. They should not be allowed back to work unless, after cutting away the thickened epidermis, no ulcer is found underneath. Watson Cheyne says recurrence is due to the thickened epidermis growing in and preventing the lips of the ulcer uniting. This I have not found to be the case. Thickened epidermis heaps itself up around the ulcer, which it quickly covers, if allowed to, before healing of the ulcer has had time to take place, and the discharge which it retains accumulates and burrows through the epidermis or upwards through the dorsum of the foot. I think it more likely that the cause of recurrence may be found in the condition of the nerve which has undergone degeneration following the callosity and inflamed bursa underneath, and that nerve-stretching should have a place in the treatment of perforating ulcers where there is no affection of the central nervous system.

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NOTE ON SYSTOLIC REDUPLICATION

By ALEXANDER JAMES, M.D., F.R.C.P.Ed.,

Physician to the Royal Infirmary, and Lecturer on the Practice of Medicine in the Edinburgh Medical School

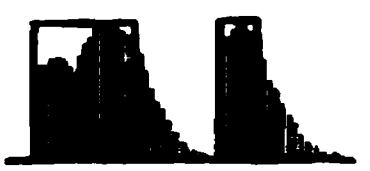
J. R., AGED 29, a dairyman, was admitted to the Royal Infirmary April 20, 1898, suffering from cardiac valvular disease. He had had rheumatic fever five times, the first attack when he was seventeen years of age, and his complaints were severe chest pain, shortness of breath and throbbing in the neck

and ears, and indeed all over the body. His heart was very much enlarged, the apex beat being between the seventh and eighth ribs, about 1½ inch outside the nipple line. On auscultation, evidence of aortic obstruction and regurgitation could be made out, the murmurs being heard all over the base of the heart and at the aortic and pulmonary areas. In the mitral area there was evidence as well of some amount of mitral regurgitation.

But the features in his case to which I wish to draw special attention were :—

1. The presence over the ventricular area of a marked double systolic impulse. This was distinct to palpation, and it could also be seen.

2. The fact that on auscultation, specially at the apex, a marked reduplication of the systolic murmur was heard. Graphically, the murmurs heard here could be represented—



3. The fact that in this patient the radial and carotid pulses presented distinct predicrotism as well as the typical characters of the Corrigan pulse (see pulse tracings).

In order to get further information as regards those special features, I took tracings also from the heart and carotid region by means of ordinary receiving and recording tambours (see tracings).

An examination of the heart tracing reveals, in connection with each beat, four undulations, 1, 2, 3, and 4. In some of them a fifth, 5, can also be made out. Examination of the carotid tracing reveals four undulations, which I have marked 3, 4, 5, and 6, in practically each beat.

If now a relationship between those ventricular and carotid tracings be looked for, by ticking off the relative positions of the undulations by compasses, it will be found that 1 and 2 of the cardiac tracing are not present on the carotid tracing, whilst number 6 of the carotid tracing does not seem to be present on the cardiac tracing. Moreover, after careful examination, I came to the conclusion that the reduplicated systolic impulse and murmurs corresponded as regards time with the undulations 3 and 4 of the cardiac tracing.

What, then, is the explanation of those tracings? There is no doubt that familiarity with cardiograms and sphygmograms makes one hesitate as regards coming to conclusions as to the

SPHYGMOGRAPH. RADIAL.

SPHYGMOGRAPH. CAROTID.

TAMBOUR TRACINGS. UPPER CAROTID; LOWER VENTRICULAR.

precise significance of their various undulations. But suggestions offer themselves.

If we take 3 and 4 of the cardiac tracing, we might suppose them to be due—3 to the initial, and 4 to the residual ventricular contraction—the papillary muscle contraction of Roy and Adami. As has been said, these two undulations corresponded as regards time with the double impulse and double systolic murmur. But, then, how can the existence of undulations 1 and 2 of the ventricular tracing be explained? One of them might, of course, be the auricular wave; but, then, what of the other?

On the theory that there might be marked asynchronism between the action of the two sides of the heart, it might be suggested that 1 and 2 might be due to the contraction of the two auricles, just as 5 and 6 might be due to the closure of the aortic and pulmonary valves.

As regards the predicrotic wave in the radial and carotid sphygmograms, it certainly seemed to bear a relationship to the doubling of the ventricular impulse and systolic murmur. It was certainly the case that when the ventricular impulse and the systolic murmur were most markedly doubled this predicrotic wave could be most easily felt by the finger, and was best demonstrated by the sphygmograph. Further, I have repeatedly observed in other patients, and specially in cases of aortic regurgitation, that marked predicrotism of the radial pulse is often associated with doubling of the first sound over the ventricles.

In this patient, after a few days rest in hospital, the symptoms ameliorated, and the doubled impulse and murmurs and predicrotism of the radial pulse disappeared to such an extent that I found that further investigation by means of tracings yielded no more results.

Digest

RECENT LITERATURE ON ATRESIA OF THE VAGINA

By J. W. BALLANTYNE, M.D., F.R.C.P.Ed.

SINCE 1890 not a few important contributions have been made to the literature of malformations of the vagina. The most noteworthy advances have taken place along the lines of an increase

in our knowledge of the embryology of the vaginal canal, and of an improvement in the technique of the operative treatment of atresia vaginalis; but in other directions also there has been distinct progress.

Embryology of the Vagina.—It has long been accepted that the Fallopian tubes, uterus, and vagina have a common origin in the Müllerian ducts of the embryo, although at first it was thought that the vagina was a derivative of the urogenital sinus. In a somewhat crude fashion it may be said that the Fallopian tube is developed from the upper part of the Müllerian duct, which lies above the origin of the round or Hunterian ligament; while the uterus and vagina are produced by the fusion of the two Müllerian ducts below the level of the Hunterian ligaments, in that part of their course which is situated in the genital cord. The genital cord, it will be remembered, contains four ducts, the Müllerian placed centrally, with the Wolffian situated laterally, and stretches from the insertion of the round ligaments to the urogenital sinus. The fusion of the Müllerian ducts into one canal (utero-vaginal) is complete at the third month of fœtal life, and the simple epithelium lining it becomes stratified pavement in type in the lower *third*, and cylindrical in the upper part. In time the lower *half* is supplied with the stratified epithelium, and the upper half with the cylindrical. With regard to the vaginal part, that lined by stratified pavement epithelium, it has been noted that during the fourth month its lumen is closed by an epithelial lamina. This lamina increases in thickness and grows downwards by a proliferation of its cellular elements, and it is not till the sixth month that the permanent lumen appears, by the breaking down of the central cells.

It is with regard to the part played by the Wolffian ducts in the formation of the vagina and its lumen that a difference of opinion has existed among recent writers. Minot (26), summarising the views of earlier observers, states that the epithelial lamina, a little way above the urogenital sinus, has a T shape, as seen in transverse section, and that the two side portions are probably remnants of the Wolffian ducts, which unite with the vagina at this point. It is significant, Minot goes on to say, that in the cow the persistent ducts of Gartner (Wolffian) open into the vagina, and the question arises whether this connection is not general in the placentalia. Nagel (66) has found that in embryos of twelve to thirteen mms. in length the Wolffian ducts and the ureters open about the same level into the canalis urogenetalis, the Müllerian ducts being at this time at a much higher point and not related with the urogenital canal. In embryos of 25 mms. in length, the ureters have become quite separated from the openings of the Wolffian ducts through the formation of the trigone of the bladder, and the Müllerian ducts

have now reached the canalis urogenitalis, and lie in very close apposition with the Wolffian ducts. At a later period, through the formation of the urethra, the opening of the fused Müllerian ducts (vagina) has become quite separated from the opening of the ureters, while the lower end of the Wolffian ducts is seen at a much higher level and not at all in the proximity of the lower end of the vagina. The lower end of the blended Müllerian ducts is solid, and forms an eminence (Müller's) in the wall of the urogenital canal; this solid rod of cells is at first very short, but afterwards lengthens, and at its lower end becomes bulbous. The bulbous part becomes hollow in the centre, and the tissue between its cavity and the urogenital sinus gives rise to the hymen. In these changes in the bulbous part of the fused Müllerian ducts the Wolffian ducts have not played a part, and Nagel holds that at the time when the development of the vagina is beginning the Wolffian ducts commence to shrink, and remnants of them are not thereafter found below the level of the junction of the uterus and vagina. He is therefore of opinion that the structures found near the urethral orifice are not remnants of the Wolffian ducts, neither have the cysts met with in the anterior vaginal wall any relation with these ducts.

In striking contrast to these conclusions of Nagel are the deductions which Berry Hart (61) has drawn from the study of five embryos and fœtuses from five weeks to the full time in age. Hart gives a quite different explanation of the bulbous distension found at the lower end of the fused Müllerian ducts from that furnished by Nagel. He points out that in the five weeks' fœtus there are four canals in the genital cord, the two outer being the Wolffian ducts and the two inner the Müllerian; a week later the Müllerian ducts have coalesced but the Wolffian ones are still distinct. At a lower level the Wolffian ducts open into the urogenital sinus, while the ducts of Müller end in the eminence of Müller between these. Immediately before the Wolffian ducts so end they flatten out laterally and with the Müllerian ducts form an H-shaped appearance on transverse section. To begin with, then, the vagina is Müllerian in origin and has a lumen. In the third month Hart finds at what may be termed the site of the vaginal entrance an ingrowth, the deeper layer of the vestibule lining passing in and taking with it the surface layers also; as a result of the desquamation of the superficial layers a canal is formed up to the outer aspect of the hymen. Further, a little higher in the vaginal axis two oval collections of cells are to be seen from which cords of actively proliferating cells pass in several streams to fill up the vaginal lumen as far as the cervix uteri and to map out the vaginal fornices. These oval collections of cells Hart regards as Wolffian in origin, and therefore calls them the Wolffian bulbs; they represent, accord-

ing to him, a proliferation of the lower ends of the Wolffian ducts. Their epithelium at first fills up the lumen of the Müllerian vagina, maps out the fornices, covers the vaginal portion of the cervix, and passes for a distance into the cervical canal. Then the central cells are shed and a lumen again formed. But further, the hymeneal opening is brought about by the epithelial involution from below (already referred to) meeting the distending Wolffian bulbs above; the bulbs coalesce and break down in the centre, and the hymen is therefore formed from the Wolffian bulbs (which according to Hart are of epiblastic origin) and has an inner surface covered with epiblast and an outer derived from the urogenital sinus and therefore hypoblastic. To the Wolffian bulbs, therefore, Hart ascribes the double function of giving an epiblastic lining to the Müllerian vagina and of forming the hymen; in this way he accounts for the fact that the lining membrane of the vagina becomes skin-like in cases of prolapsus uteri. That the bulbs are truly Wolffian in nature he believes for the apparently sufficient reason that he has traced a Wolffian duct into one of them. It is probable that the structure described by Nagel as the distended lower end of the blended Müllerian ducts and the Wolffian bulbs of Hart are identical; but while the former author regards the bulbous distension as Müllerian in origin, the latter looks upon it as Wolffian. Further investigations ought to settle this point; but in the meantime it must be admitted that Hart's interpretation of the appearances seen has at least the merit of offering a reasonable explanation of certain vaginal and vulvar anomalies (as will be immediately apparent), and of accounting for the skin-like character of the vaginal mucous membrane.

Atresia of the Vagina.—Recent investigations have gone to show that cases of complete absence of the vagina (*viz.*, those in which no vaginal structure at all is found between the bladder and rectum) are exceedingly rare. The anomaly, when it does occur, is generally if not always associated with marked malformations of the whole pelvis, of the whole body even; this is well seen in the sireniform fœtus, in which not only is there no trace of the vagina but there is complete want of development of the Müllerian and Wolffian ducts in their whole extent. The cases of so-called absence of the vagina are now known to be instances of atresia vaginalis in which the formation of the canal has not advanced beyond its early stages. If the embryological views of Hart (62) be accepted, it may be hazarded that the Müllerian vagina is formed, becomes blocked with cells, and does not again receive a lumen through defect of the formation of the Wolffian bulbs. Of the many cases of vaginal atresia put on record during the last nine years a few may be referred

to in detail, both on account of their pathological and surgical interest.

E. Schwartz (68), for instance, records the case of an unmarried woman, thirty-three years of age, in whom atresia of the lower two-thirds of the vagina existed. No tissue could be felt between the rectum and bladder, but on the bimanual examination a fluctuating tumour, the size of a hen's egg, was felt with a small hard body on the top of it (atrophied uterus). Laparotomy was performed, when it was found that the uterus was atrophic, that the left ovary and tube were normal, and that on the right side nothing save a firm band could be seen going to the inguinal region. The upper third of the vagina was seen to be cystic. The abdomen was closed. A transverse incision was made from one labium minus to the other, the bladder and rectum were separated, the upper third of the vagina was reached and punctured with the result that a quantity of thick brown matter came out (altered menstrual blood). A small cervix with a normal os were then discovered. The vaginal walls were sutured to the labia minora, and so a canal about two inches in length was made. Dilators were used to keep the canal open, and once a little blood, possibly menstrual in character, was passed; but none has passed since, and the only sign of activity of the internal genital organs is the occurrence once a month of some pain which lasts fifteen minutes. In this case it was evident that there was a partial vaginal atresia of the anterior variety; possibly the upper portion of vagina present represented the original Müllerian canal. The operation was only partly successful, and the rudimentary condition of the internal genital organs makes it doubtful whether any improvement later on could be looked for.

An example of the rarer form of posterior partial atresia vaginæ seems to be furnished by J. Murphy (45). It was that of a woman, forty-two years of age, who had been married for twenty-five years, and who had never menstruated nor had any periodical troubles. Four months before she was seen by Murphy she began to have pain in the lower part of the abdomen and to lose flesh. A large fluctuating tumour was felt, reaching to above the umbilicus and lying most to the right side. Per vaginam a cul-de-sac of about 2 to 3 inches was felt, which per rectum could be inverted like a pocket. Abdominal section was performed, when the tumour was found to be covered with peritoneum. It was punctured, and brown serum and then a lot of blood clot was removed from it, and the uterus was shelled out of what seemed to be the broad ligament. The patient recovered. This seems to have been a case of complete atresia of the os uteri and upper part of the vagina, and it looks as if the uterus had hibernated all these years. The abdomen

had to be re-opened for hæmorrhage, when it was noted that the ovaries were fairly normal. This operation was also recovered from; but the hæmorrhage again recurred, and the patient died. No autopsy was allowed. The curious apparent awakening of the uterus to menstrual activity at the age of forty-two is the most striking feature in this case, especially if it be borne in mind that the ovaries were found to be fairly normal. The absence of a *post-mortem* is, of course, much to be regretted.

A case of vaginal atresia reported by Paul Walton (79) is noteworthy on account of the new method of operative procedure which was adopted. It was that of an unmarried girl, aged twenty-five, who had never menstruated but who had frequent attacks of epistaxis and monthly recurrences of pain in the lower part of the abdomen. An attempt had been made three years previously to correct the malformation, but this had not been successful. Walton found that the patient was well formed in other respects, with the exception that she had a coloboma of the right eye. The labia and clitoris were normally developed, and on separating the nymphæ an infundibulum lined with mucous membrane was discovered, marking the site of the former operation. Under an anæsthetic it was possible by the abdomino-rectal examination to make out a hard body indicating an atrophied uterus, and an ovary on the left side but none on the right. No fibrous tract could be made out between the vulvar infundibulum and the uterus. On account of the menstrual pain, and because the patient wished to marry, Walton determined to operate. He made an H-shaped incision in the vulvar infundibulum, 6 cms. in length; then with the fingers and scissors he dissected upwards, and not finding the uterus at once he proceeded to do a posterior colpotomy, that is to say he opened quickly into the pouch of Douglas; and then he introduced his finger into the peritoneal cavity and found the body of the uterus as large as a chestnut, with a fairly well-developed right ovary and an atrophic left one. With hooked forceps he was now able to seize the uterus, and he found that the cervix was represented by a fibrous tract as large as a pencil, about an inch in length, which lost itself in the recto-vesical septum. The cervix was imperforate, so he amputated it, this being the quickest way of reaching its cavity. A small quantity of black blood escaped, and the sound could be passed in to a distance of 4 cms., indicating the size of the uterus. Walton seized the cervix with forceps and made two lateral incisions in it, and then closed the peritoneal incision with two cat-gut sutures. The uterus was quite free and could be drawn down almost to the vulva, and the rest of the plastic operation was comparatively easily accomplished; the margins of the vulvar incisions were sutured to the raw surfaces of the cer-

vix, and tissue was obtained from the labia minora to give length to the artificial vagina. The forceps attached to the cervix was now removed and the uterus passed upwards, taking with it the mucous infundibulum and so producing a vaginal canal about three inches in depth. This was packed with iodoform gauze. Recovery was perfect, the gauze having to be frequently changed on account of a real menstrual flow which followed the operation. Five months had elapsed since the formation of the artificial vagina and the patient was enjoying good health, she had no menstrual pains, there was a regular although small menstrual flow, and the vagina was thoroughly cicatrised and nearly normal. Walton's case shows very clearly the advantage of opening at once into the peritoneal cavity and so discovering the state of the uterus and annexa; in this way the operator is able to draw the parts down to the external opening in the vulva and pass the sutures with much greater ease. The adoption of the performance of posterior colpotomy (if this name can be given to the operation when there is really no vaginal tract) marks a distinct advance; and now-a-days, when the opening of the peritoneum is no longer dreaded as it once was, it may be expected that Walton's plan will be frequently employed in place of the old method of hunting about for a long time for the uterus in the recto-vesical septum, often only to find that after all the womb was so defective as to be functionless.

A case illustrating the point last mentioned was reported by Uibeleisen (57) in 1896. It was that of a girl, aged twenty-two, with healthy parents and sisters and brothers. She had always been healthy herself, but had never menstruated, and she now suffered from recurring attacks of pain in the arms and legs. The pelvis was of the female type, the mammæ were well developed, and the abdomen was not distended and nowhere painful. The labia, majora as well as minora, were normal, the urethra was not specially wide, and there was a hymen duplex giving entrance to a cavity ending blindly and measuring only 1½ cms. in depth. With a finger in the rectum and a sound in the bladder nothing like a vagina could be felt, but high up there was a transversely running, firm, and movable fold of the thickness of a lead pencil. On the left side was a body the size of a pea (ovary?), while on the right side was a normally large ovary. The patient was not operated upon, it being considered that the uterus was solid and possibly bicornate. It was thought that if the pain increased it might be best to remove the right ovary. The consideration of Walton's case (79) suggests a more hopeful prognosis in such instances as that described by Uibeleisen. A somewhat similar case was met with by Picqué (8). It was that of a girl, seventeen years old, whose mother

was healthy, but whose father had died of tuberculosis and alcoholism; she had never menstruated, but her sister, twenty years old, had done so regularly. Reference may here be made to the fact that atresia vaginalis is occasionally common to several members of the same family, as in the case reported by Grandin (41). Picqué's patient had normal labia majora and minora, but only a fibrous cord could be felt between the bladder and rectum, and bimanually a rudimentary uterus of the size of a nut with normal ovaries and tubes was palpated. An artificial vagina was made. In a similar case [K. Frank (1)], the ovaries were removed by laparotomy.

In the case reported by Dumitrescu (52) it would seem as if posterior colpotomy, had it been performed, might have saved a second operation. The patient, aged nineteen, had an imperforate hymen and an atresic vagina. She suffered every month from intense abdominal and lumbar pains. Marchant made a prolonged dissection in the recto-vesical space, and made an artificial vagina, but failed to find the cervix uteri. Later, another attempt was made to reach the uterus by the vaginal incision, but without success. Marchant then, as Dumitrescu relates, opened into the abdomen, found a rudimentary uterus and very small ovaries, pushed the uterus towards the vagina, seized the cervix and drew it into the vaginal cul-de-sac. The patient made a good recovery, was free of pain, and had a slight menstrual discharge.

Albertin (31), in a case of absence of the uterus and atresia of the vagina, made an artificial vaginal cul-de-sac by incision, dissection upwards, and packing of the cavity. In a somewhat similar case Fulton (23) took similar means to create an artificial vagina. It seems now to be accepted, among Continental and American authors at any rate, that it is quite justifiable to attempt to construct what may be termed a coitional vagina, even when there are no signs of functional activity on the side of the internal genitals organs. Certainly cases are on record in which much misery in married life has been caused by this defect in the wife, and various nervous affections, not excluding insanity and suicide, have been traced to the mental effect produced by the genital malformation [Dumitrescu (52)]; but it must of course always be borne in mind that operative procedures having as their aim simply the construction of an artificial vagina for purposes of cohabitation are "operations de complaisance," and not "de nécessité." Such operations, therefore, must be free from risk to life, if they are performed at all. It is quite different with the vaginal atresias associated with functionally active ovaries, tubes and uterus; in them the malformation is not only the source of much pain and suffering, but may also be a danger to life. These considerations must

be kept before us in forming an estimate of the value of the various plastic procedures which have been from time to time employed in the creation of an artificial vagina.

Reference must be made to Sneguireff's case (29), both on account of the question of the justifiability of operation which it raises, and by reason of the novelty of the operative means employed. It was that of a married woman, aged seventeen, who had never menstruated. She had before marriage had pains in the abdomen, recurring every three or two weeks, but these had now disappeared. A positive domestic drama had been the result of unsuccessful attempts at coitus, and the patient had tried to commit suicide. The mammary glands were well developed, so was the mons veneris. The labia majora and the clitoris were normal, but the nymphæ were atrophic. The orifice of the urethra showed a funnel-shaped dilatation. A fibrous cord between the bladder and rectum was the only indication of a vagina, and the bimanual examination revealed the absence of the uterus and the problematical presence of ovaries. Sneguireff, therefore, strongly persuaded the patient from running the risk of a plastic operation for the construction of an artificial canal, but she insisted upon meeting the dangers of operative interference. Accordingly this author devised an ingenious plan by which he utilised the lower part of the rectum to form a vaginal canal. First he made an incision posterior to the anus, and resected the coccyx. Then he separated the rectum from the coccyx with his finger, and from the surrounding parts, especially from the bladder. The intestine was drawn into the wound and divided between two ligatures; the upper end of the lower segment was then closed with a continuous suture, and in this way the cul-de-sac or cupola of the vagina was formed. The upper segment of the rectum was drawn down into the wound and sutured to the skin in the opening made for the resection of the coccyx; it was surrounded by fibres of the levator ani and by the third sphincter. This constituted the first part of the operative interference. Fourteen days later the construction of the vulva was proceeded with. Introducing the knife at the orifice of the former anus, Sneguireff carried it forwards towards the urethra, and fixed the rectal mucous membrane to the neighbouring parts by means of a continuous suture. The patient recovered perfectly from both operations, but for some time the new anal opening had only an imperfect sphincteric action; gradually, however, power to retain not only liquid and solid fæces, but even gas was gained. To this operation of colpopoiesis the author gives the name of "formation of the vagina by the transplantation of the anus and rectum."

It does not appear that Sneguireff's operation has been

commonly employed—the risks are considerable and the chance of rectal incontinence is not slight. Such heteroplastic plans of procedure as that recommended by Swiecicki (30), which consists in the formation of the lining membrane of the new vagina from transplanted grafts of a rabbit's intestine, although not so risky as Sneguireff's, have not been widely adopted. Indeed, the operation generally preferred seems to be the autoplastic one, in which use is made of the vestibular and vulvar lining membrane to form the interior of the artificial vagina. This was the method employed by Schwartz (68), to which reference has already been made; and it has also been used by H. Delagénière (13), Picqué (8), Roux (17), Villar (47), and many others. It is certainly better than the older methods of incision, of incision along with dissection and gauze packing, and of electrolysis. If the contention that the vagina gets its normal lining membrane from epiblastic tissues be sustained, an additional (and a strong) argument will be furnished for giving the preference to the autoplastic measures of forming an artificial vagina. When the operation is undertaken for retained menstrual blood in a functionally active uterus, it will be well to consider whether Walton's plan (79) of at once opening into the pouch of Douglas from the vulva ought not to be adopted as an addition to the autoplastic procedure.

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Meetings of Societies

Edinburgh Medico-Chirurgical Society

THE seventh meeting of the session was held on Wednesday, 3rd May—Sir John Batty Tuke, the President, in the chair.

Dr R. Fleming showed specimens of (1) typhoid ulceration of intestine from a breast-fed child of ten months; (2) gumma of brain; (3) waxy degeneration of kidney and liver.

Dr Harvey Littlejohn and Dr Claud B. Ker read a paper on the history and clinical features of typhus fever.

Dr Harvey Littlejohn dealt with the history of the recent outbreak in Edinburgh which commenced at the beginning of October last year. In all 82 cases occurred, and of these 38 were males and 44 females. The disease seems to have been introduced into the city about the beginning of September, and owing to the first cases not being recognised as typhus fever by the medical attendants, it rapidly increased towards the end of October and in November. The cases were practically localised to one circumscribed area in the city, and in the majority of instances the spread was found to be due to intercommunication between the various families. In fact, direct contact with a patient appeared to be necessary in order to infect a healthy person, as, although many of the infected households lived in densely crowded tenement blocks, the disease was not found to spread to other households unless there had been actual communication with the patient. Ten deaths occurred, equal to a death-rate of 12 per cent. The low death-rate was accounted for by the fact of all the cases of the disease having been treated in hospital.

There was a striking incidence of the disease amongst children, no fewer than 28 out of the total 82 cases having occurred under 15 years. Fifty-five cases occurred at ages under 30 years.

The majority of persons affected belonged to the lowest class of the population, and lived in a state of great uncleanliness and squalor, and the disease appeared not only to be

more infectious under these conditions, but also was of a severer type.

Dr Ker then described the disease as seen in the wards of the City Hospital. After giving a general account of the ordinary course of the fever, he alluded particularly to the special features presented by his own cases. The incubation period had been ascertained in two cases, in one of which it was thirteen and in the other twelve days. A third case was seventeen days in quarantine before developing the fever.

The invasion period of the disease had been studied in eleven cases taken from quarantine. Charts illustrating the somewhat gradual rise of the temperature were shown. He considered vomiting a more common invasion symptom than was generally admitted. The crisis was not very rapid, the cases taking two or three days to attain the normal, which was in most instances reached by the evening of the fifteenth day. The urine in all the adult cases contained albumen, and fifteen cases examined for the diazo reaction of Ehrlich all gave it.

In all seventy-nine cases were treated in hospital, and of these nine died. Seven of these deaths occurred in males, and five of them were alcoholic cases. Heavy body weight, either from muscle or fat, appeared to give a bad prognosis. The death-rate also increased in a most marked manner with the age of the patient. In diagnosis the most difficult cases were those resembling enteric fever, and in these the serum reaction of Widal gave great assistance. The typical odour of the fever was also occasionally of great use in diagnosing it.

As regards treatment, stimulants were required in a large proportion of the adults, and hypnotics were given early and freely. The wards were kept at a very low temperature, and Dr Ker thought that this to a certain extent had a favourable therapeutic influence and had much of the effect that would have been obtained by cold baths. In the many children treated the fever ran a very mild course. Great attention was paid to the personal hygiene of the sixteen nurses exposed to the disease, and none of them took it.

The paper was discussed by the President, Drs Jas. Carmichael, P. A. Young, Affleck, James, Argyll Robertson, and Church.

Special Clinical and Pathological Meeting

This, the eighth meeting was held on Wednesday, 17th May.

Sir John Batty Tuke, in taking the chair, referred to the death of Dr Moir, the second oldest member of the Society. The secretary was instructed to send a letter of sympathy to the relations of the deceased.

Mr Shaw M'Laren showed a patient after operation for congenital torticollis. The division of the muscles by the open method had given a good result. The next case was that of a boy whose bladder had been ruptured through a horse falling on him. The bladder was found full of blood and there was some difficulty in stitching the rupture. Mr M'Laren also showed a patient after operation for a villous tumour of the posterior wall of the bladder, which he had removed by suprapubic cystotomy and by scissors.

A patient with Pott's fracture and backward dislocation of the foot was also shown by Mr Shaw M'Laren.

Dr Affleck showed (1) a boy of fourteen years of age with acute diabetes mellitus of only two months' duration; (2) a man of forty, with optic atrophy and diabetes mellitus, in whom, though the quantity of urine had decreased from 240 oz. to 120 oz., the sugar still remained at 30 grains per oz. His sight was impaired from optic atrophy and not from cataract.

Dr Affleck also showed a lad of sixteen suffering from diabetes insipidus. He had been passing up to 600 oz. of S.G. 1001. Only slight improvement in the quantity of the urine had followed the administration of ergot and belladonna, though he had certainly gained in weight.

Dr Alexander James showed a case of cirrhosis of the liver, with abdominal and thoracic effusions communicating with one another. Tapping the chest reduced the abdominal effusion and gave greater relief than direct tapping of the abdomen. Dr James thought that this condition probably explained those cases where very large quantities of fluid were obtained from the pleural cavity. The pressure in the pleural and peritoneal cavities was shown to be identical by means of manometers.

Dr James also exhibited a lad of twenty-three with rickets which had commenced six years ago and which had been previously shown to the Society. The deformities were well marked and were increasing. The fingers could be bent backwards to touch the forearm.

Dr Allan Jamieson showed a boy of eight years in the early stage of tropho-neurotic leprosy. When two years of age he slept with a nurse in British Guiana who had a sore on her leg which was diagnosed as ulcerative leprosy. Two years ago the boy presented some macular spots about his ear; at present he had purplish maculæ on his face, and brownish maculæ on his arms which became purplish on exposure to the air, and slightly whiter in the centre. On the nates was a whitish spot resembling morphœa. In the centres of some of the spots was slight dulling of sensation. The hands were large and exhibited slight clumsiness for finer movements, but the ulnar nerve was not affected. Dr Jamieson also showed two cases of almost identi-

cal destruction of the nose, one being syphilis, the other lupus.

Mr M'Gillivray showed two cases of ruptured gastric ulcer successfully operated on, details of which will appear in the next number of this Journal.

Dr W. Russell showed two specimens illustrating one of the unusual positions of the vermiform appendix. In the first the appendix was as long as a finger, it lay behind the cæcum and ran up the ascending colon. In the second specimen the appendix lay behind the ascending colon, the tip of it being gangrenous. In neither case would M'Burney's point have been of any value, and indeed would have been worse than useless.

Dr Russell also showed specimens from two cases of perityphlitis not originating in the appendix. In the first case there was a history of fœcal impaction, and while the appendix was found healthy, fœcal ulcers were present in the cæcum, one of which had perforated.

In the other case which was operated on the appendix was unaffected but the caput cæcum was inflamed, and this was found to have been caused by fœcal ulcers in the cæcum.

Drs Fleming and Welsh exhibited a series of cases of tuberculosis of various organs.

Mr Caird showed a patient in whom gastro-enterostomy had been performed three years ago, for what was believed to be carcinoma of the pylorus. It was found impossible to remove the affected parts, but the patient returned in two years suffering from a ventral hernia, though otherwise in good health. On operating for the hernia no trace of malignant disease could be discovered, and the patient is now in excellent health. Another patient was shown from whom the pylorus was removed three years ago for carcinoma, the growth being limited in extent and the diagnosis confirmed by the microscope. Patient appeared to be in robust health.

Mr Caird also showed various specimens, the most interesting being those from a case of multiple mesenteric cysts containing chylous and serous fluid.

Mr Cathcart showed a specimen of multiple gastric ulcers in which he had operated for perforation of one, but soon after the operation the patient died from another perforating.

Edinburgh Obstetrical Society

THE sixth ordinary meeting was held on May 10th, Dr Halliday Croom in the chair.

The President showed a cystic ovary removed from a patient who suffered from severe dysmenorrhœa and equally severe

"mittelschmerz," the point of special interest being that the tubes seemed perfectly normal and showed no signs of distension. A simple ovarian tumour was also shown, the removal of which, from a patient aged sixty-eight years, was followed by sub-acute mania and death six weeks later, and thus resembling the case described at a previous meeting of this session.

Among other interesting exhibits were frozen sections of fœtuses by Dr J. W. Ballantyne, showing (1) iniencephaly and (2) anencephaly, and numerous plates showing the various degrees of retroflexion of the spine in the latter condition.

An interesting case of fatal *oedema glottidis* in the later months of pregnancy was communicated by Dr Lucas. The cause was not ascertained.

Dr Lamond Lackie's paper on *puerperal hyperpyrexia* was illustrated by a case in which a very high temperature was reached without a fatal result. The patient was thirty-six years of age, and had passed through five previous labours. She had a contracted brim, and the cervix was torn up to and beyond the fornix. Her sixth labour was complicated by inertia uteri, a dead child being delivered with forceps. All went well till the end of the fourth day, when she had a severe rigor and a temperature of 105°. As the vaginal discharge was foetid, an intrauterine douche was given. The temperature rose in two hours to 109°, when she became delirious. Packing in ice was resorted to, and the temperature fell satisfactorily, the patient feeling quite well again. There was nothing abnormal to be felt per vaginam excepting the badly-torn cervix. Twenty hours later another rigor ushered in a temperature of 110°, which was treated in the same way. Twenty-four hours afterwards, Dr Lackie again saw the patient, who expressed herself as feeling quite well. Her temperature and pulse each stood at 100; but from a restless, wandering, fitful movement of the eyes and an apparent doubt as to her surroundings, he was enabled to foretell another attack, which occurred in the course of half an hour. The temperature on this occasion rose to 112°; the patient was quite comatose, with stertorous breathing; no pulse could be felt at the wrist, and a fatal result was expected at any minute. The ice pack and antipyrin per rectum, however, again brought the temperature down, and a douche administered at the same time brought away a large slough and foul-smelling discharge from the vagina. As soon as the patient was conscious, stimulants were freely administered by the mouth and hypodermically. Next day the temperature was normal and the patient's general condition good; escape of urine and vaginal examination, however, showed a large cervico-vesical fistula. She had no further symptoms, and the fistula was successfully operated on at a later date.

This, then, was a case of auto-genetic infection giving rise to severe sapræmia, there being no signs of pyæmia or septicæmia. Dr Lackie drew special attention to the premonitory symptoms of "well-being," restlessness, especially of the eyes, and doubt of the surroundings, as well seen in hyperpyrexia during acute rheumatism. As regards treatment, that by the cold bath ensures a more gradual lowering of the temperature than the ice pack does, but entails more movement and exhaustion for the patient. Whichever mode be adopted, it must be stopped as soon as the temperature has fallen half way to the normal, as otherwise the continued fall which invariably results would produce dangerous collapse.

Dr Fordyce gave *notes on two cases of peritonial effusion*, the first tubercular, the second malignant, with microscopic preparations. The first was a strong, healthy girl, with glands showing in the neck and a slight evening rise of temperature.

The fluid was removed by laparotomy; the peritoneum was greatly thickened and studded with tubercles, which were especially numerous over the appendages and uterus. The fluid revealed no bacilli, but Dr Fordyce was fortunate enough to discover one among the numerous giant cells in a section of the peritoneum. The second case was that of a woman aged twenty-eight. Swelling of the abdomen had existed for seven months; pain was not a marked symptom, and there was a slight evening rise of temperature. She had a worn and anxious expression, and was somewhat emaciated. Several hard, irregular nodules were felt in the pelvis. Operation showed the peritonial cavity filled with reddish fluid, both ovaries indurated, nodular and fixed, and evidently the seat of some growth, which was put down as malignant and which had extended to the pelvic peritoneum. Seven months later the abdomen was again opened, partly to evacuate re-accumulated fluid and partly for the cure of a ventral hernia which had formed in the site of the former incision. The abdominal peritoneum was found studded with small indurated nodules—extensions from the pelvic growth. A section of one of these was shown. It seems to be chiefly a new connective tissue formation, scattered through which are numerous large irregular colloid masses. The specimen gives no direct evidence of tubercle, nor is it evidently malignant. Dr Fordyce is inclined to speculate whether after all this is not a case of tubercular peritonitis undergoing an inflammatory reaction following on the first operation. Such a reaction, according to some observers, is the most important factor in the cure of tubercular peritonitis after operation; it greatly increases the absorptive power of the peritoneum, prevents further infection, vascularises the tubercular nodules, and finally promotes their absorption

and transformation into connective tissue. Certain points in the patient's history lend plausibility to this hypothesis —her age, the absence of marked pain, the slight evening rise of temperature, and the improvement after the first operation.

Dr Haig Ferguson communicated some *observations on labour complicated by a minor degree of pelvic contraction in primiparæ and multiparæ*, in the course of which he suggested a fresh cause for the increasing difficulties in successive labours sometimes met with. An illustrative case bore her first child in 1888—a large male weighing nearly 9 lbs. When labour came on the head was normally in the pelvis, and no great difficulty was experienced. Her second child, a female, of between 7 and 8 lbs., was born in 1890. At labour the head was not through the brim, but was fixed there. The labour ended fairly easily. Both these children were healthy and well. Her third labour, two years later, produced a male between 8 and 9 lbs. Here the membranes ruptured early, and the head never engaged, the child being ultimately delivered dead by podalic version—vigorous supra-pubic pressure being necessary to force the head through the brim. A fourth labour in 1894 produced a similar result. The child, in spite of the mother's increasing age—at this time thirty years—was no less bulky, and the head was with difficulty pulled through the brim by the aid of forceps. Her fifth labour, in 1897, was not less difficult, but the child, though still-born, was easily resuscitated. Induction of premature labour was proposed during the fourth and fifth pregnancies, but was objected to. A contraction of the conjugate at the brim to just over $3\frac{1}{2}$ inches was the sole cause of the difficulty, the pelvis being, in fact, a non-rachitic flat pelvis. Why should the first two labours have been easy and the last three so difficult? 'Dr Ferguson, after eliminating other causes, accounted for this by suggesting that in the first pregnancy the vigorous and unstretched abdominal muscles and tonic uterus had forced the head into the pelvis during the last month, and before it had attained its full size. In the second case the same factors were acting, though not so strongly, and also the child was a female and somewhat smaller. In the subsequent pregnancies the abdominal muscles were more relaxed and the tonicity of the uterus reduced, the head in consequence developing to its full size above the brim, and showing no tendency to engage naturally during labour. With regard to the treatment of such cases, Dr Ferguson advocated the early application of forceps to secure engagement of the head, ample time being then allowed for moulding.

Aberdeen Medico-Chirurgical Society

A MEETING of this Society was held on May 4th—Dr T. Milne, President, in the chair.

Dr R. Bruce, Cults, was admitted a member.

Professor Stephenson read a paper on "Pregnancy and Labour as viewed through Frozen Sections."

In illustration of the subject there were placed on view around the room the plates from Leopold's Atlas, "Uterus und Kind"; the sections published by Braune, Chiara, Schroeder, Winter, Stratz, Pestalozza, Barbour; and on the table for examination by the members, the Atlases of Pinard and Varnier, Barbour, Webster, and the older works of Smellie and William Hunter.

The value of research by means of frozen sections, in a purely scientific point of view, was referred to; but the author's object on the present occasion was to show to some extent what had been done, and to draw attention to the benefit to be derived by all from a careful study of the plates there exhibited. Some of these are now used as illustrations in recent text-books, but when so reproduced they are to a certain extent lessened in value by being reduced in scale. The mind has to grasp size and bulk as well as topographical relations. The mind works by means of impressions it has from time to time received, not merely those of the moment. Such impressions, ideas, conceptions, when derived from verbal descriptions, are liable to be hazy and inaccurate. Impressions derived from the sense of touch alone cannot always be relied upon, they have often proved delusive. When making an examination, greater precision and quickness in perception and clearness in conception of the unseen are gained when the mind has been stored with ideas formed by an intimate acquaintance with accurate and full size portraitures of internal structures.

Attention was drawn to various plates, and their bearing on practice discussed. In recent times the importance and value of external palpation as a means of diagnosis is more fully recognised. In this respect a study of the plates is instructive and helpful. The accuracy of the delineation cannot be questioned. With the several parts of the fœtus and their relations to the maternal structures revealed to the eye, the mind can readily realise what the impression conveyed to the hand would be when palpating through the abdominal walls. It is evident that the conventional attitude of the fœtus, as given in illustrations of text-books, is far from being constant. It is seen how the limbs may be extended, how the degree of flexure of the spine varies, and the form of the uterus may be altered.

The bearing of the variations in the attitude of the child on

the operation of turning was pointed out. Questions on this subject have hitherto been discussed on the conventional ideas as to relations, often made to suit the opinions of the writers. These as well as others, such as the advantage or disadvantage of bringing down a leg in breech presentation and the propriety of turning in placenta prævia and in narrowed pelvis, must be re-examined in the light thrown on the subject by frozen sections. In determining these points, what has hitherto been too much left out, because little was known of it, is the condition of the uterine walls. It is in this respect the greatest advance in obstetric knowledge has been made, but here also the greatest diversity of opinion regarding the interpretation of the conditions found still reigns. The facts themselves seem to conflict. The more recent views on this subject were given, more especially regarding the presence and absence of the retraction ring. To call it the "contraction" ring is a misconception of its nature and a misnomer. It should be regarded as evidence of the degree to which *retraction* of the uterus has taken place. Its importance as such is not yet fully recognised. That it indicates urgency for interference when felt externally is admitted by all; the author is also of opinion that when felt well marked by the hand internally, as in proceeding to turn, it should be regarded as a contra-indication to the operation.

The sections of the uterus in the puerperium were also well worthy of careful study. A better idea of the size and relations of the organ, the absence of any cavity, the thickness of the walls, and the complete filling of the pelvis, could be better realised than by palpation or statement of measurements.

Great interest was shown by the members in the paper and demonstration, and its practical bearings were fully recognised and appreciated. The method of demonstration followed by the author is one which might with great advantage be much extended in its scope.

Forfarshire Medical Association

A MEETING of this Society was held on Wednesday, 3rd May—Dr Mackie Whyte, Vice-President, in the chair.

Professor Kynoch showed a uterus removed by vaginal hysterectomy for cancer of the cervix.

Dr Buist showed drawings of a liver from a case of acute yellow atrophy and of microscopic sections of it. He then quoted statistics of cases in several hospitals of acute yellow atrophy and the relative frequency of its occurrence in cases

of pregnancy which he considered was not necessarily a factor in this disease.

This disease was then considered from the histological side and also the clinical side. The multiplication of bile ducts he thought was often only an apparent increase.

He quoted a case he had under his care which simulated acute yellow atrophy of the liver but proved to be toxæmia from intestinal obstruction.

Professor Kynoch, Drs Foggie and M'Vicar spoke on the probable cause of the disease. Dr Buist briefly replied that cases published showed it to be due to some toxic substance whose nature was not yet discovered.

Professor Stalker communicated a case of severe anæmia following menorrhagia in which there were convulsions and exaggeration of the deep reflexes in the upper and lower extremities, bilateral sacral bedsore, double optic neuritis. In less than a week improvement commenced, the exaggeration of the deep reflexes improved first in the lower extremities. The hallucinations which had existed disappeared. The optic neuritis disappeared and the patient was steadily improving.

Dr M'Gillivray spoke on the optic neuritis and corroborated what had been said on its disappearance.

Dr Mackie Whyte read a paper on the cases of chronic tuberculous peritonitis that had been under his care in the Dundee Royal Infirmary during the last five and a half years. They were eleven in number; nine were dead, one was in a hopeless condition, and one had recovered completely. The single case in which laparotomy had been performed had died; and though most of the cases seemed unsuitable for operation when admitted, still it was thought it might be more frequently tried. Most of the cases lived four and a half months on an average after the worst of symptoms, two for one and a half or two years. Family tuberculosis was present in seven. In three cases there were marked pleuritic symptoms, and in three old tuberculosis of the lungs. The principal signs and symptoms were reviewed, and various points in the diagnosis and treatment were discussed.

Professor Stalker also spoke on the subject.

Mr Greig then continued his communication on two years in the Surgical Outpatient Room of the Infirmary. In it he discussed the cases of kyphosis and scoliosis, the relative frequency of both in the two sexes, the ages of occurrence, the varieties and the treatment. He pointed out the difficulty of treatment of these cases in the surgical outpatient department, and recommended that if the plaster of Paris jacket be used it should be combined with the dorsal position as being likely to afford more support to the spine.

Passing to the consideration of tubercular disease of bones, ostismivelitis, periostitis and osteitis were considered. Lupus was briefly mentioned, especially as regards the parts affected, the age and sex. Tubercular adenitis was then referred to, and the treatment briefly discussed. Tubercular arthritis was then taken up, the ages of occurrence, the relative frequency in the sexes and the frequency with which the different joints were affected. Following on this, traumatic synovitis and sprains were spoken of, and tables exhibited to show the comparison between these and tubercular arthritis as regards site, age and sex.

Short details were given of the cases of rheumatic arthritis, osteo-arthritis, and several varieties of congenital deformities, *e.g.* retained testis, cleft palate, nævus, and congenital tumour of sternomasto'd.

Scottish Medical News

MEDICAL PASSES AT EDINBURGH UNIVERSITY

THE following is the official list of passes at the recent First, Second and Third Professional Examinations in Edinburgh University for Degrees in Medicine and Surgery :—

First Professional.—R. T. G. Aickin, G. C. Anderson, W. W. Anderson, F. L. Atkinson, James Bentley, W. F. Brayne (B.A.), E. C. Brown, E. E. Cassaday, K. S. Clark, E. L. Colby, J. H. Connolly, W. A. Cowan, C. H. Craig, Henry Corwen, Arthur Dangerfield, H. S. Davidson, D. E. Derry, T. S. Dick-Cleland, F. H. Dickson, F. C. Drew, H. N. Fletcher, Louis Fourie, E. G. Fraenkl, H. S. Gaskell, A. C. Geddes, Archibald Gillespie, E. G. Girdwood, W. L. M. Goldie, A. M. Gurney, E. I. Hall, C. R. F. Hartley, C. H. Houghton, J. H. Jones, J. M. Kirkness, W. S. Laidlaw, Vivian Langmore, A. W. B. Loudon, Henry MacCormac, I. M. MacRae, James M'Turk, W. E. Marshall, S. A. Moore (B.A.), A. B. Morgan, E. G. Morton, Ernest Muir, C. H. Muller, W. S. Pillans, Herdman Porter, A. F. Rabagliati, E. M. Reece, W. R. Reid, W. J. D. Robertson, David Sandler, D. J. Scott, F. W. S. Shepherd, G. D. Sloan, J. A. Small, A. B. Spence, Amelia Sutcliffe, E. J. Taylor, J. D. Tuit, Louis Turiansky, Robert Veitch, G. J. Wentzel, F. A. Wille, G. H. Winch, and W. D. Wright.

Second Professional.—D. M. Aitken, J. F. Allan, C. M. Anderson, R. V. C. Ash, A. A. Ayton, R. T. Baillie, A. C. Begg, R. A. Belilios, J. H. M. Bell, R. J. Bradley, Alfred Brown, E. E. Brown, G. M. Brown, James Brownlee, R. W. Buchanan, Henry Buist, E. P. Calder, R. A. Cameron, S. M. D. Campbell, C. C. Choyce, P. T. Copeland, G. G. Cumming, B. M. Cunningham, W. H.

Dickinson, M. S. Dickson, W. E. C. Dickson, B.Sc. (with distinction), Henry Dodgson, J. W. Duffus, J. M. Dupont, J. R. Edward, R. S. Ellis, B. G. Forman, Catherine Fraser, Stephen Garvin, R. A. Glegg, R. M. Grant, A. L. Gurney, A. R. Hallam, A. M. Hamilton, R. A. J. Harper, E. R. Henderson, D. C. Henry, C. W. Howe, Andrew Hunter (M.A.), A. E. Hunter, C. E. P. Husband, William Hutchison, E. M. Inglis, E. M. G. Jayne, G. A. Jolly, A. C. Keay, J. P. Kennedy, G. I. Lecesne, William Lee, C. H. Lindsay, Samuel Lyle, J. G. M'Bride, L. T. M'Lintock, C. B. M'Conaghy, J. B. M'Cutcheon, William Macdougall, Elizabeth M'Elney, P. F. M'Farlan, George M'Farland, A. F. M'Kay, John M'Kenzie, H. J. C. M'Laren, K. D. C. Macrae, William Mair (M.A.), A. M. Malcolmson, G. R. Mill (with distinction), William Miller, J. G. Mitchell, D.Sc. (with distinction), John Morrison, David Munro, J. G. Munro (with distinction), A. C. Murray, G. S. Murray, A. D. Nimmo, D. A. Ogilvie, J. H. C. Orr, William Paterson, S. G. Peill, C. E. Pepper, George Feriera, H. G. Pesel, L. W. Pole, E. J. Porteous, W. G. Porter, E. T Potts, W. H. Prentice, H. St J. Randell, William Ritchie, H. M. Roberts, G. C. I. Robertson, J. S. E. Robertson, M. W. Robertson, C. W. Saleeby (with distinction), J. D. Saner, M. C. C. Seton, T. B. Shaw, M. W. Smart, M. M. Smith, Kate Southon, B. A. Spence, G. C. Strathairn, David Sutherland, Paul Telles, G. L. Thomson, E. C. Thomson, J. P. Thorne, G. R. Turner, E. J. Tyrell, E. A. Walker, A. S. Watson, A. G. Waugh, Philip Weatherbie, Edwin Wells, T. S. B. Williams (with distinction), A. J. Williamson, F. E. Wilson, James Woods, and T. B. Unwin.

Third Professional.—Robert Affleck, T. H. W. Alexander, C. H. Allen, J. D. Anderson, M. S. Anderson, Hubert Bishop, A. B. Black, O. C. Bradley, L. P. Brassey, J. M. L. Brown (M.A.), Adam Brydon, G. F. Buist, G. B. Butt, H. E. Arbuckle, R. A. J. Asbury, B. H. S. Aylward, A. J. Baird, S. A. Ballantyne, M. C. Beatty, J. H. Bell, R. A. Cameron, J. P. Campbell, Malcolm Campbell, G. S. Carmichael, J. B. Cassels, V. P. A. Coghill, W. P. Cormack, John Craig, T. A. Davies, William Eadie, R. S. Ellis, J. S. Enslin, Edward Ewart, D. C. L. Fitzwilliams, Andrew Fleming, Catherine Fraser, Alexander Frew, W. E. Frost, Yoshimobu Fukuda, J. S. Geikie, J. C. Gilchrist, W. Girdwood, P. S. Haldane, G. H. Hanna, Frederick Hardie, N. E. Harding, Herbert Harris, Davis Heron, Eleanor Hodson, K. W. Hogg, H. J. Hoile, L. J. Hood, F. F. C. Jagger, E. B. Jamieson, J. G. S. Jamieson (M.A.), Miles Johnston, J. C. Kennedy, F. K. Kerr, S. M. de Kock, Langworthy Laurie, R. G. Leach, A. C. Lennie, Gerard Lowther, R. J. M'Clelland, C. B. M'Conaghey, J. G. M'Dougall, S. L. M'Elderry, W. E. M'Farlane, A. C. N. M'Hattie, J. H. M'Kee, A. J. MacKenzie, D. S. MacKnight, H. J. Maclaren, H. J. M'Lean, D. M. MacLeod, J. M. A. Macmillan, Angus

M'Nab, G. W. P. Maitland, A. A. Martin, Harry Mason, F. C. Matthew, E. T. Melhuish, J. B. Milne, Joseph Miskeily, James Munro, Florizel Myers, H. C. Nixon, J. C. Parker, Norman Patterson, C. B. Paul, John Pender, M. C. Pepper, J. B. Primmer, J. R. Prytherch, Samuel Rattray, O. L. Rhys, C. M. Richardson (with distinction), D. J. Roberts, G. A. P. Ross, John Ross (M.A.), R. A. Ross (with distinction), W. C. Ross, A. J. Ryle, I. S. Sandeman, T. B. H. Scott, W. S. Scott, F. T. Selkirk, J. F. Selkirk, H. D. Shepherd, T. S. Shepherd, S. R. Sibbald, F. D. Simpson, William Sloss, J. A. Smail, C. B. Snow, G. B. A. Speirs, A. D. Spence, E. R. Sproull, T. G. Stewart, C. P. Strong, M. A. Swan, J. H. Thornley, Alexander Trotter, C. S. Vartan, William Wallace (with distinction), A. G. Watson, N. S. Wells, G. D. Whyte, F. M. Wigg, A. W. Wilson, M. R. Wilson, T. J. G. Wilson, A. M. Wood (with distinction), and Garnet Wright.

Reviews

A System of Medicine. By many writers. Edited by THOMAS CLIFFORD ALLBUTT, M.A., M.D., LL.D., F.R.C.P., F.R.S. Volume V., pp. 1058. London: Macmillan & Co., Limited. Price 25s. net.

THIS volume is devoted to Diseases of the Lungs and Pleura and of the Circulatory System. It thus forms one of the most practically useful volumes of the system, and one which will be much consulted by the general practitioner. In the section on Diseases of the Lungs the various chapters are written in a plain, direct, and practical style. They are, as a whole, neither overweighted with much argumentation nor padded with much therapeutics. There are a good many statements to which exception might be taken; even in the first chapter, that dealing with bronchitis, Dr Ewart says of the capillary bronchitis of children that "the disease is usually fatal, and the prognosis, except in relatively robust constitutions, is practically hopeless." That statement will startle many a general practitioner. Yet the subject is well handled, and the treatment of the various types into which he separates bronchitis good, while his chapter on Bronchiectasis is full of careful description.

Dr Pye-Smith is the author of the chapter on Pneumonia; in it he disagrees with the ordinarily accepted view that the crepitations are produced in the pulmonary alveoli. His reason-

ing is not conclusive, and he seems to disregard the fact that so long as air enters the alveoli they are distended during inspiration and retract during expiration. This movement when the alveoli contain fluid or viscid contents is surely sufficient to explain the sound. The section on treatment contains much useful teaching, but we note that the writer has not been encouraged in the use of digitalis. We are almost inclined to think he has been unfortunate in the quality of the drug at his disposal. Under catarrhal pneumonia he includes, as is usual, the broncho-pneumonias, and describes the alveoli as filled with epithelium and with smaller cells. As a matter of fact, many disseminated pneumonias do not fulfil this classical description, and are histologically identical with lobar pneumonia.

Phthisis Pulmonalis is treated in a judicial manner by Dr Percy Kidd, and not at too great length.

Dr Arlidge deals with Pneumoconiosis, and Dr Rolleston has an interesting little chapter on Pulmonary Aspergillosis, in which he suggests that from the resemblances it presents to tuberculosis it may frequently be overlooked.

Emphysema is dealt with by Dr Kingston Fowler, who speaks favourably of the use of the compressed air bath in its treatment.

Dr Goodhart discusses with force and clearness the pathology of Asthma and Hay Fever, and indicates the lines of treatment to be followed both during the paroxysm and in the intervals of freedom, and wisely lays much stress on the necessity of taking measures to combat the tendency in young persons.

Dr Kingston Fowler contributes a valuable chapter on Syphilitic Diseases of the Lungs.

Diseases of the Pleura are from the pens of Drs Samuel West, Gee, Herringham, and D. W. Finlay.

Two thirds of the volume are devoted to Diseases of the Circulatory System, and this part opens with three general chapters, two on the blood and one on cardiac physics.

The various blood diseases are described and discussed at length, and the chapters dealing with them contain all that is known regarding this interesting class of disease. Of several of them, although much has been added to the knowledge of the morbid changes present, it may still be said that we have not got to the root of their pathogeny.

The section devoted to Heart Diseases is written by Drs Humphrey, Roberts, Allbutt, Dreschfeld, Douglas Powell, and Sansom. It is therefore replete with mature experience and characterised by literary facility. Here, as in the section devoted to diseases of the organs of respiration, there are many smaller points which we question.

This volume as a whole will, we believe, be as acceptable as its predecessors, and the editor may be satisfied with the result of his work.

The Throat and Nose, and their Diseases. By LENNOX BROWNE, F.R.C.S.Ed., Senior Surgeon to the Central London Throat, Nose, and Ear Hospital. Fifth edition. Royal 8vo, pp. 967, with coloured plates and 147 illustrations. London: Baillière, Tindall & Co. 1899. Price 31s. 6d. net.

THAT this treatise has been appreciated by those for whom it was written, is demonstrated by the fact that the present issue is the fifth edition, not including a French translation, in twenty years, and the author deserves the heartiest congratulations of British specialists on the publication of the very handsome volume before us. The book is already so familiar to all interested in diseases of the throat and nose that it is unnecessary to review the subject matter in detail. But it may be noted that, when compared with previous editions, there are here many important additions to the subject matter, some notable alterations, and several omissions. Amongst the latter is that of the chapter on Aural Maladies, although the chapter on Deafness in relation to affections of the Throat and Nose is retained. As the former was of a very elementary character and much too brief, giving the student a very imperfect idea of the scope of aural surgery, the course now adopted by the author is to be commended.

Notwithstanding this and other omissions, the bulk of this volume is much greater than that of any of its predecessors, a direct reflection of the increased and increasing importance of laryngology and rhinology alike. The additions are too numerous to be specified, and are met with in every section. Many of the sections have been entirely re-written and carefully brought up to date, and in some of the departments

Mr Lennox Browne has availed himself of the assistance of experts. Mr Mayo Collier has revised the chapter on Anatomy; that on Histo-pathology has been contributed by Mr Wingrave, and the chapter on Nervous Diseases of the Larynx is largely the work of the late Dr James Cagney.

The most important change is in the chapter on Diphtheria and Croup. On these subjects Mr Lennox Browne held strong views, and never feared to give expression to them. He has now abandoned the position he formerly so strongly maintained and now accepts and gives the definition of croup "as a pseudo-membraneous exudation of the larynx and trachea, which may be classified on exactly the same lines as diphtheria in the fauces."

In the treatment of diphtheria, however, he is not only not a "zealous apostle" of serum-therapy, but has not yet apparently been converted. His quotations relative to the efficacy of anti-toxin and his remarks thereon are in the main derogatory. Exception might be taken to the colours of some of the illustrations, but for the most part they are excellent, and must prove of considerable help to the student. There is a very free list of formulæ of the remedies recommended in the text, and a very complete general index, as well as an index of literary references. We have had much pleasure in the perusal of the work, and confidently recommend it to all desirous of possessing a most complete and interesting treatise on laryngology and rhinology.

An American Text-Book of the Diseases of Children. By American Teachers. Second Edition, revised and enlarged. Edited by LOUIS STARR, M.D., assisted by THOMPSON S. WESTCOTT, M.D. 2 vols. imp. 8vo, pp. 1200, with 28 half-tone plates and woodcuts. London: The Rebman Publishing Company (Ld.). 1898. Price 42s.

DR STARR'S "Text-Book of the Diseases of Children" has won for itself so high a reputation that the second edition is sure of a welcome, and its division into two volumes is certainly a change for the better. In this edition we notice several new features, most of which are calculated to increase its popularity.

There are three articles on new subjects. One of these, by Dr Thompson S. Westcott, is on Modified Milk and Percentage Milk Mixtures, and deals in an interesting way with a very

important question. Dr Westcott describes first the management of the Milk Laboratories, which are now so largely patronised in America. The cows received into the dairy farms which are under the control of these institutions must all pass the tuberculin test, and their health, hygiene, feeding, and grooming are all most carefully seen to. Personal cleanliness on the part of the employees is also strictly enforced, and sterilisation of all bottles, implements and utensils used carefully carried out. In fact, every effort is made to secure practical asepsis in the handling of the milk by attention to all details, very much as is done in modern aseptic surgery. It is very interesting to find that, as the result of these precautions, it is found that "except in hot weather, or in cases of pre-existing milk-infection, sterilisation, even pasteurisation, is unnecessary." The rest of the article is devoted to the consideration of easy methods by which those who are not within reach of a milk laboratory may carry out the home modification of milk for themselves.

Dr Rachford, of Cincinnati, has contributed a paper on Lithæmia. He divides the clinical manifestations of this condition in children into (1) those due to the local effects of uric acid and other irritating substances on the urinary passages; (2) gastro-intestinal symptoms, varying from slight dyspepsia to vomiting and diarrhœa of a very severe type; (3) nervous symptoms, such as headache, gastric pain, nausea, vomiting, eclampsia, and rapid breathing, all of which may occur in paroxysms; (4) eczema; and (5) changes in the urine itself. The main lines of the treatment which he recommends consist in strict dieting (chiefly milk and cereals), open-air exercise, a course of calomel and alkalies, followed by salol or salicylate of soda according to the age of the child, benzoate of lithia, laxatives, and diluents. The article is a very interesting and suggestive one, and will well repay careful study.

The section on Orthopædics, by Dr James E. Moore, is also new. It is well illustrated, but not a strong article in other respects. The subjects dealt with include congenital wryneck, lateral curvature, the various tubercular affections of the spine and joints, congenital dislocation of the hip, club-foot, and the deformities which arise from paralysis and rickets. It seems to us that too much has been attempted in the small space allotted, and that many of the statements are so general

in character as to be devoid both of interest and of practical utility.

The chapters on Typhoid Fever, Rubella, Chickenpox, Tubercular Meningitis, Hydrocephalus, and Scurvy have been re-written, and are excellent; while those on Infant Feeding, Measles, Diphtheria, and Cretinism have been more or less thoroughly revised and brought up to date.

Although the articles in it are, naturally, not all of equal value, Dr Starr's Text-Book deserves to rank as a standard work, and may certainly be recommended as a trustworthy authority on the present state of our knowledge of the diseases of children.

George Harley: the Life of a London Physician. Edited by his daughter, Mrs ALEC TWEEDIE. 8vo, pp. xii., 360. London: The Scientific Press, Limited. 1899. Price 16s.

TO the medical reader this book will come as a distinct disappointment. Of George Harley's work as a scientist and a physician it does not give as much as is to be found in the necessarily brief obituary notices that appeared in the Medical Journals. No doubt Mrs Tweedie's book is intended for the general public, and undue emphasis must not be laid upon the medical aspect of Dr Harley's career. But this principle may be carried too far, and the biography then becomes like the play of Hamlet with the Prince of Denmark left out. Something like this has happened in the present instance, and as a further consequence, in order to fill up the volume, much has been included which will scarcely interest the general reader even when it has some slight connection with George Harley himself. Thus twenty pages are devoted to an interview with Squire Waterton, and twelve pages given to a description of Napoleon the Third's marriage, and to a consideration of the question "Was he a coward?" In chapter iii., entitled "Edinburgh, student life," we might have expected to find some account of the professors of that day, the state of medical teaching, or the method of examination. As it is the space is filled with a description of Harley's grandmother, "a funny little story" about his hat, a reference to Burke and Hare, and a ghost story. The chapters headed "Paris" and "Germany," whither Harley went to continue his studies, are just as unsatisfactory. When a description is given of a duel, of an execution, and of private theatricals, we feel aggrieved that other things probably more interesting even to the general reader have been left out. We would

willingly barter them all for an account of the life of a resident in the Edinburgh Royal Infirmary when Harley was one. We would gladly forego Harley's opinion on Napoleon and Waterton, and many other things, to find out what he thought of Virchow, under whom, it is incidentally mentioned that he studied. There are some statements made which will be at least novel to the medical reader. We fancy the general practitioner will be astonished to learn that "he has to sign his name in full at the bottom of his prescriptions, while a member of the Royal College of Physicians is only required to put his initials, although the date is a necessity."

La Photothérapie. Par N. R. FINSEN. 8vo (pp. 99). Paris: Georges Carré et C. Naud, Editeurs. 1899.

THIS volume is a reprint, with some additions, of three papers contributed by the author to *La Semaine médicale* and the *Hospitals-tidende* of Copenhagen. The first is a plea for the treatment of smallpox by exclusion of the chemically active rays of light. The writer adduces facts to show that the rays of shorter wave-length often cause erythema and inflammation of the skin, and he holds that in like manner they exercise an unfavourable influence on the development of the smallpox vesicle, being in short the chief factor in determining its suppuration. He therefore advocates the treatment of smallpox in rooms to which only deep red light is admitted, and even that in small quantity. In support of the method a series of cases from the practice of various hospitals is adduced, where the above treatment was followed by good results—secondary fever, suppuration, and subsequent pitting being conspicuously absent.

The second paper is a brief experimental study on the exciting effects of light of various colours on the organism.

The third, based on the bactericidal power of the violet and ultra-violet rays, proposes a method of utilising them in the treatment of lupus. To secure the most rapid results, sunlight or the rays from a very powerful electric arc lamp are focused on the diseased spot by a large convex lens (preferably of rock-crystal), the heat rays being eliminated by suitable means. The paper is illustrated by portraits of cases before and after treatment, and by views of the hospital where the method is practised. In one of these we are treated to a scene of

Arcadian simplicity, the patients lying on couches in the sunshine, each with an attendant nymph who diligently focuses the sun's rays on the lupus patch with a powerful burning glass.

A Junior Course of Practical Zoology. By the late A. MILNES MARSHALL, M.D., D.Sc., and the late C. HERBERT HURST, Ph.D. Fifth edition, revised by F. W. GAMBLE, M.Sc. Post 8vo, xxxv., 486 pp., with 73 figs. London: Smith, Elder & Co. 1899. Price 10s. 6d.

WE welcome a fifth edition of this hand-book, so favourably known to teachers and students alike for its clearness, precision and practicality. It was long since past praising, but each edition brings it a little nearer perfection, and Mr Gamble is to be congratulated on having decidedly improved it without obviously adding to its size. The chapters on technique have been recast, but most of the other changes are in details. Mr Gamble notes in regard to one of the alterations that it "has the recommendation of not implying a conclusion based on evidence which cannot be presented in this work"; but will not the same criterion exclude some other interpretations, such as that which regards the kidney of the dogfish as a metanephros?

Abstracts from Recent Literature

MEDICINE

CHOREA CHRONICA.—Sikora (*Gazette des Hopitaux*, 1899, p. 75) gives an exhaustive account of the so-called *Huntington's Chorea*.. As an etiological factor heredity is of the greatest importance, sharply separating the condition from chorea vulgaris. Many examples of this have been noted. Thus as many as seventeen choreics have been present in three generations of one family. If, however, one member of a family be spared, the descendants of that member escape. If the descendants of a chroreic escape chrorea, they are liable to other nervous affections. The affection does not, as a rule, appear in early years. It is more common towards adult life, but a good number of cases in infants have been recorded. Towards old age the condition becomes less frequent. The two sexes seem to be equally predisposed to the complaint. Rheumatism plays but little rôle in the etiology of the complaint.

The pathology of the condition is by no means established. In most cases the meninges are found to be congested, thickened

and adherent. In most cases there is dilatation and sclerosis of the cerebral vessels, and these changes are most marked in the cerebral cortex.

The ontset of the disease is variable; it may be sudden, developing in a few hours. It may follow successive attacks of chorea vulgaris, or it may be slow and progressive.

The movements are disorderly, involuntary, irregular, and without rhythm; continual while awake, rapid without violence, giving the patient at times the appearance of an actor desirous of provoking the laughter of fools. The movements first appear in the head, the muscles of the lips and tongue being involved. The muscles of the palate and pharynx show their invasion by difficulty in deglutition, the larynx by alteration in the voice. The motor muscles of the eyes show a relative immunity. In the upper extremities the movements commence in the muscles of the fingers and hands; in the lower extremities the movements are less marked and are delayed, appearing first in the thighs. In the trunk the movements are marked. The movements are modified by different conditions. They are diminished by repose; in most cases they cease during sleep, by voluntary effort. Emotion augments the movements.

Muscular force remains intact during a long period, and there is absence of muscular atrophy. Cutaneous sensibility is generally preserved, as is also the electrical sensibility. The reflexes are generally exaggerated, especially the patellar tendon reflex. The spinal senses remain normal. The respiratory functions are much disturbed if the diaphragm is involved. The circulatory and urinary systems remain normal. The sphincters retain their tone. The mental condition deteriorates markedly, and there is loss of memory.

The progress of the disease is slow but certainly fatal. Recovery is unknown. The duration of chorea chronica is prolonged. Some patients attacked at 30 or 35 reaching 60, 70, or 80 years of age.

The diagnosis of the disease is generally easily based upon the characters of the movements, the age of the patient, his antecedents, and the development of the disease. Sydenham's chorea comes on during infancy or adolescence without hereditary taint, and the movements are augmented by voluntary movement. It persists at the longest for a few months. Hysterical chorea with acute onset is systematised, presents periods of remission, and the patient shows the ordinary signs of hysteria. Symptomatic chorea may most easily lead to an error of diagnosis, but if it is of long duration it is strictly localised to a portion of the body and associated with a hemiplegia, the reflexes being exaggerated on the one side of the body and normal on the other.

The prognosis in chorea chronica is always grave, both for the patients and his or her descendants. The treatment is more or less symptomatic. Various drugs, hydrotherapy, electricity, etc., are recommended, but seem to have little influence on the course of the disease.

TOBACCO EPILEPSY.—In the *Revue Scientifique* of 11th March, a résumé is given of a paper on this subject by MM. Ballet and Faure. These observers injected into dogs and guinea-pigs an infusion of French tobacco and produced epileptiform convulsive attacks. At the end of these seizures, the animals remained motionless as if asleep for some minutes, then they awakened, and one could note frequently that a degree of hemiplegia or of paraplegia continued for some hours. In other cases, instead of these paralytic symptoms, a marked spasmodic condition was observed. When the amount injected was very large, the attack was of great severity and the animal died at the beginning of the convulsive phase. If this period was passed, death did not usually take place and the animal generally recovered.

In brief, in certain animals the injection of tobacco infusions causes convulsions which, as in man, resemble the epileptic seizure. It has been often stated that tobacco poisoning in all its forms in man may be the origin of epilepsy. These experiments may serve to clear up this hitherto imperfectly known question. They will also help in the elucidation of the pathogenesis of toxic epilepsy. It will thus be easily seen that the hereditary or predisposing factor which is generally thought to play an important part in man, plays in animals a totally unimportant part when we consider the large part taken by the intoxication itself.

THE ABSORPTION OF IRON.—Professor A. E. Austin has an interesting paper in the *Boston Medical and Surgical Journal* for March 2nd. He states that there are many investigators who have convinced themselves that inorganic iron is unabsorbable by the uninjured intestine, and can only be taken up when by its corrosive action it has so irritated the intestinal mucous membrane that absorption becomes easy. An examination of the foods which are usually consumed shows that they do not contain an atom of inorganic iron. Milk, yolk of egg, meat, all possess iron, but in an organic form, and this in health must supply all the bodily requirements.

Various preparations of iron in combination with albumin are on the market, *e.g.*—albumates, peptonates, ferratin, etc. The addition of sulphuretted hydrogen to any of these causes the precipitation of sulphide of iron. According to Bunge such a

precipitation is impossible with organic iron. Hence we cannot regard these peptonates and other salts of organic acids other than as inorganic irons, though there can be no question that they are far less irritating than the usual forms.

Can hæmatin be absorbed and utilised by a synthetic process for the renewed formation of hæmoglobin? To answer this many experiments were carried out, and the conclusions arrived at were:—

1. That iron is constantly being eliminated both in urine and fæces even during fasting.
2. That apparently raw meat furnishes an available form of iron for absorption under normal conditions.
3. That inorganic iron as represented by ferrous sulphate is non-absorbable.
4. That albuminates and peptonates of iron are absorbable, but to a limited extent.
5. That organic iron, of which hæmatin and hæmoglobin are representatives, furnishes the most easily absorbable and most valuable of all iron preparations.

LOCAL TREATMENT OF DIPHTHERIA BY LOEFFLER'S SOLUTION.—In addition to the injection of antidiphtheritic serum, or when it is not employed, Professor Loeffler (*Deutsches medicinische Zeitung*) makes use of the following applications with most beneficial results. When the disease is still localised to the uvula or tonsils, treatment by this method almost certainly checks the further spread of the disease. The investigator found that carbolic acid dissolved in alcohol, when applied to the diphtheritic patches, destroyed the germs in twenty seconds. More rapid results were, however, obtained when such substances as benzol or toluol were added. The addition of menthol is advocated when young children or nervous patients have to be dealt with. The mode of application is as follows:—The mucus is first removed from the affected portions with a cotton mop. Another swab saturated with the following mixture is then applied and kept in contact with the diphtheritic patch for ten seconds:—

℞. Menthol . . . 10 grm.
Toluol . . . . ad 36 c.c.
Solve. Misce.
Then add—
Creolin . . . . 2 c.c.
Sesquichloride of iron solution 4 c.c.
Absolute alcohol . . ad 100 c.c.

After the first, another application must be immediately made. The treatment should be kept up for four or five days at

intervals of three hours. At the end of this time the disease will probably have disappeared. In cases of mixed infection, as where staphylococci or streptococci are present, this treatment is not so effectual as it is with pure growths of the Loeffler bacillus.

CONTRIBUTION TO THE STUDY OF SPRING FINGER (*doigt à ressort*).—Dr Bégoune has an interesting paper on this affection in the October number of the *Revue Médicale de la Suisse Romande*. He reviews the condition found in twenty-four similar cases—two of those observations are very rare, namely one where the whole four fingers are symmetrically affected and the other where the condition affected the knee. It is not a disease which is so rare as is generally believed. It may affect the fingers of people of very different occupations (laundresses, knitters, military men, tailoresses, quilters, weavers, etc.), and may render them incapable for their work. It may be observed to a slight degree amongst those who fatigue their fingers (especially the thumbs) excessively; thus masseurs and laundresses may suffer. Outdoor workers may also have a transient attack of this affection on resuming their work after a period of more or less complete rest during the winter.

The signs of spring finger are very marked. The finger or fingers do not differ from the normal appearance, but they cannot be spontaneously flexed nor completely extended. There is no pain on movement of this restricted kind. When the flexion or extension has reached a certain angle the movement stops, and it is only by the voluntary energy of the patient, as by the help of the other hand or by pressure on a fixed object that the difficulty is overcome. When these restraints are removed the finger shuts abruptly as does a spring penknife. This movement usually takes place at the first interphalangeal joint. Either spontaneously or when the finger snaps down a more or less severe pain is felt in the neighbourhood of the metacarpo-phalangeal joint, sometimes in the palm or along the course of the tendon, but rarely in the interphalangeal joint. When the hand is at rest a dull pain and prickling is felt in the arm. Work is often rendered impossible.

On inspection generally very little can be made out: at most only perhaps a diffuse swelling on the palmar surface at the base of the first phalanx. On palpation a slight nodular swelling can generally be made out, and this follows the movements of the flexor tendons, being most distinct on flexing the finger. By pushing on this nodosity we can cause the spring action to take place. This spring-like action is seen both during flexion and extension of the finger.

As regards pathology some believe that the synovial sacs of

the flexors form indurations comparable to inflammatory exudations; that these increase the size of the tendon and so do not allow of its free movement under the palmar aponeurosis. Others again think that it originates in a circumscribed thickening of some part of a flexor tendon with concomitant narrowing of the sheath. The author enters into a detailed analysis of some forty recorded cases and inclines to the belief that it is due to a nodular swelling of the flexor tendons causing a disproportion between the tendons and their sheaths.

As regards *ætiology*, acute or chronic rheumatism; professional fatigue especially in those of a rheumatic diathesis; traumatism and tubercular disease have been noted as causes, as well as the fact of its occurring congenitally. The disease may come on at any age, but chiefly affects those between thirty and fifty. It sometimes occurs in both hands symmetrically, and its seat is most frequently in the ring finger.

The *treatment* should be directed against any rheumatic or gouty tendency which may be present. Other general diseases must be attended to, as anæmia. If massage, electricity or other means fail to produce improvement then operative measures must be resorted to.

THE CLINICAL FEATURES OF SPORADIC TRICHINOSIS.—Osler, writing in the *American Journal of the Medical Sciences* for March, gives notes of five cases of trichinosis treated in his wards during the past two years and a half. Until quite recently, Osler had had no clinical experience of this disease, having seen (to recognise) but one case in Traube's clinic in Berlin in 1873. The probability is, he thinks, that he has frequently overlooked cases in his hospital service.

The *symptoms* of trichinosis may be divided into two groups —those corresponding to the period of development of the adult trichinæ in the intestine, and those the result of the emigration of the brood of young worms into the muscles.

The symptoms of *invasion* were very similar to those of typhoid fever, headache, general malaise, pains in the bones and limbs, and slight gastro-intestinal symptoms.

In the epidemics which have been described, the initial gastro-intestinal symptoms have been severe, assuming in some cases a choleraic type. In Osler's sporadic cases, however, these symptoms were slight.

The temperature curve also, in four of the cases, resembled that of typhoid fever. The pulse-rate seemed to be dependent on the height of the fever. The respirations were sometimes increased out of proportion to the fever.

After development of the disease, and corresponding to the period after the young trichinæ arrived in the muscles, three

points were of great value in diagnosis. Two of these points are well known; the third has been discovered by the examination of the blood in Osler's cases.

1. *Muscular pains and swellings* as a rule are present in greater or less degree. In a very severe case the swelling and hardness of the muscles, the extreme pain on pressure, the position of flexion of the arms and legs, without any redness or swelling of the joints themselves, are almost pathognomonic. In cases of less severe infection, on the other hand, the pains, tenderness and swelling may be almost absent.

2. *Œdema* is usually present, and is a valuable symptom, as it appears early in trichinosis and is not seen in typhoid fever. In its most characteristic form it appears in the eyelids and over the eyebrows. Later in the disease the hands and feet may become œdematous, and in some cases an œdema, with some erythema, develops over the affected muscles.

3. *Leucocytosis and Eosinophilia.*—Until this time no particular examination of the blood in trichinosis had been made.

The blood of Osler's patients was examined in order to confirm the diagnosis of typhoid, as the symptoms were doubtful. In the first case, the leucocytes were found to number 17,000 per c.mm., a point which almost excluded typhoid. On making a differential count, a great increase of the eosinophiles was found. Instead of the normal 2% there were found to be 37%.

An elaborate study of the blood in this disease was made by Dr T. R. Brown, who published his results in the *Journal of Experimental Medicine*, 1898, Vol. iii.

The eosinophilia, in the first case, reached at one time the figure of 68·2%.

In the other cases also the eosinophilia was very pronounced.

In the five cases recorded, the diagnosis of trichinosis was confirmed by the microscopical examination of a small portion of muscle excised from the patient under cocaine. All the specimens showed embryo trichinæ. All five cases recovered.

AN EPIDEMIC OF PSITTACOSIS.—Nicolle, writing in the January number of the *Archives provinciales de médecine*, describes a small epidemic of psittacosis which occurred among the inhabitants of one household in Bernay. It occurred subsequently to the arrival of a paroquet which had been bought in Paris. The bird, when it arrived fourteen days before the beginning of the epidemic, was distinctly out of sorts, and was suffering from diarrhœa. During meal-times it was allowed out of its cage, and was fed by the different members of the family, either from the hand or the mouth. Shortly after its arrival it

bit three of these persons deeply enough to draw blood. The parrot recovered, but a fortnight after its arrival one member after another of the household took ill. Seven persons in all were attacked within a fortnight, and four of these died.

The features of the disease were either pulmonary symptoms in the form of localised pneumonia, *with marked absence of expectoration*, or intestinal symptoms, or more commonly both combined. All the cases showed the typhoid state.

Of the seven cases, six were apparently the result of direct infection from the bird. The seventh case was that of an old sick-nurse who attended one of the patients, and who had not been in contact with the parrot, which had been dispatched to the laboratory of Rouen.

A dog in the house also became ill and suffered from diarrhœa.

The bacteriological investigations were carried on in the laboratory of Rouen. In their researches for the purposes of isolating the bacillus the investigators made use of expectoration, blood, and fecal matter of the patients, but they were unable to isolate the bacillus described by Nocard. They found, however, that Nocard's bacilli were agglutinated by the blood serum of some of the patients, but as they had serum from only three of the cases, the investigation was not a completely thorough one. The blood serum of one patient also agglutinated typhoid bacilli, though not so rapidly as those of psittacosis. The writer remarks that the blood serum of animals inoculated with cultures of the bacillus psittacosis usually shows itself very active towards typhoid bacilli.

GYNECOLOGY

STYPTICIN—A NEW HÆMOSTATIC (M. Freund, *Monatss. f. Geburtsh. u. Gyn.*, 1899, Bd. IX., p. 353, March).—Freund, who originally introduced stypticin, which is an oxidation product of narcotin, gives in this paper a summary of the main reports on its use which have been published. The drug, which is usually given in sugar-coated tablets (3/4 gr.), 3-6 times a day, or half as much in solution injected into the gluteal muscles, produces no deleterious effects even in much larger doses or when continued for a long time. Stypticin is very efficient in uncomplicated menorrhagia, especially of the climacteric, but also in adolescents, and acts promptly after curettement. It acts well in bleeding accompanying disease of the appendages, and at times in myoma, but it exerts no influence on the anatomical condition at the root of the menorrhagia. It has been given during pregnancy without exciting uterine contractions.

AN UNUSUAL INJURY DURING AN ATTEMPTED CURRETTAGE.—Boldt of New York (*Monatss. f. Geburtsh. u. Gyn.*, March 1899, Bd. IX., p. 360) reports the following case. The physician stated that, attempting to remove some abortion remnants, he pulled some lumps of fat from the front surface of the uterus with the placental forceps, and then found a piece of white skin, which he pulled, and then thought that he had torn the bowel. When Boldt saw the patient next day, she felt so well that she wanted to get up. The uterus was pregnant about the tenth week, and had a perforation on the posterior surface just above the cervix. Boldt thought that the physician must be mistaken about the bowel torn, and decided to wait. There was no change till the afternoon of the third day, when she became restless, had abdominal pain, distention and tenderness, and the pulse became quick and feeble. Cœliotomy showed blood and fæces in the abdomen, six inches of the ileum detached from its mesentery and gangrenous, and a torn bowel. The patient did not recover from the shock. The ovum was intact. Other analogous cases are then mentioned. After this paper Saenger adds a note, insisting on all manipulations after abortion being under the guidance of the finger.

CHROBAK (*Monatssch. f. Geb.*, 1899, IX., p. 485) emphasises the opinions in Saenger's note, and says that in spite of the healthy teaching of the text-books, he has in recent years seen in consultation more cases of severe illness due to needless currettage than he has seen puerperal deaths. Though he does not abandon the curette or other instruments, which he thinks more liable to perforate, he insists that the manipulations must be under the guidance of the finger, and points out the dangers, apart from perforation, of interfering in puerperal cases. An abortion which would proceed and end easily is made dangerous by premature rupture of its membranes, even with the finger. In the puerperal uterus the curette takes more than mucous membrane, and in infective cases it opens new paths for the virus.

THE PROPHYLAXIS OF PUERPERAL NEURITIS.—Huber (*Monatss. f. Geburtsh. u. Gyn.*, 1899, IX., p. 487) says that labour is the most frequent period for the origin of puerperal neuritis (including neuralgias and pareses), and emphasises the pressure of the head on the pelvic nerves as the chief cause. He naturally looks to the avoidance of prolonged labour as the most important element in prophylaxis, and argues strongly for the use of chloroform, which has the additional advantage of reducing the spasm of the pelvic muscles, and so softening the cushion on which the nerves lie. Of thermic and chemical causes operating

during birth, he specifies the douche and the chemical antiseptic, especially corrosive sublimate, and argues against their routine employment. Toxic causes are almost all included in sepsis, and he criticises unfavourably the fashionable "auto-intoxication" theory. He points out that septic processes leave behind exudates and cicatrical tissue, which may constrict the nerves and give rise to neuritis in a subsequent pregnancy.

OBLITERATION OF THE UMBILICAL VESSELS BY ELECTRO-HÆMOSTASIS (Dickinson, *New York Med. Journ.*, 1899, 69, p. 304).—After some criticism of the ordinary treatment of the umbilical stump, Dickinson goes on to say that the ideal ligation would consist in isolating and ligaturing the vessels separately and suturing over the wound. As this could be done only in hospital, he tried Skene's forceps and is completely satisfied with the results. The stump is white and horny and reorganises. As an alternative for those who do not have the forceps he suggests treatment by a pile clamp and Paquelin cautery. The results of careful treatment with dry dressing are so good, in our experience, that it is needless even in maternity hospitals to pursue counsels of perfection of this kind which cannot be imitated by the general practitioner who will have later to acquire the experience in simple methods, necessary to enable him to employ them safely.

SECONDARY HÆMORRHAGE AFTER VAGINAL EXTIRPATION OF THE UTERUS.—Levy (*Hospitalstidende*, 1899, p. 286, 15th March), who has operated thirty-nine times in the last ten years, records two cases which were consecutive. (1) A forty-three-year-old married woman, with prolapse and severe bleeding in consequence of an apple-sized fibroma at the fundus, on the ninth day after hysterectomy had the vagina cleansed and some necrosing tissue clipped off. Four days later she had suddenly bleeding so free that she was almost pulseless. It was stopped by plugging and no special bleeding point could be seen. (2) A forty-year-old woman on the sixteenth day after hysterectomy for an egg-sized cancroid of the anterior lip, had the vagina cleansed and some necrotic tissue removed by slight traction. Next day she suddenly flooded. The aftercourse was as in the other case. Levy operated by clamping and has had no other complications. The temperature was normal in both cases and the patient feeling well.

CEREBROSPINAL MENINGITIS CONFOUNDED WITH ECLAMPSIA (E. Möller, *Hospitalstidende*, 1899, p. 295, 22nd March).—A thirty-four-year-old woman in a state of profound coma was admitted to Prof. Horwitz's klinik in the eighth month of her

second pregnancy. Two days previously she had felt out of sorts and next day had a few shiverings. On the morning of admission she was found unconscious on the floor and had several convulsions. On admission she was not in labour, there was no œdema; lungs and heart were normal; the pulse was 100 tense and forcible, and the temperature 99°.3 F. She got morphia for restlessness, and slept quietly. In the morning she had a typical convulsion. Catheterisation gave 800 gm. urine showing the albumen reaction moderately and containing a few granular casts. Temperature in morning 101°, rose suddenly to 104° with the pulse quick and tense; 500 gm. blood was drawn, but as the condition was unsatisfactory she was delivered by Cæsarian section (fundal incision) and afterwards received an injection of 500 gm. saline solution. The pulse, however, grew weaker and she died. The heart was natural, the lungs congested and œdematous. The kidneys showed parenchymatous and fatty degeneration, the spleen was not large. The brain had gelatinous yellow pus along the vessels in the sulci and the vessels were congested. There was no fluid in the ventricles. A bean-shaped diplococcus was found and cultivated from the pus. A possibility of meningitis had been glanced at owing to the existence of an epidemic at the time.

ELEPHANTIASIS CONGENITA (F. Tobiesen, *Hospitalstidende*, 1899, p. 271, 15th March).—Under this title are recorded some cases of a family affection of the skin of the legs. The children at birth had a firm œdema extending from the feet, where both sole and back were affected, up the legs. On pressure it dimpled slightly. There was no abnormality of the bones and the affection did not interfere with the child's well-being or affect its learning to walk. Later as the œdema became less the skin was hard and could not be raised in a fold. It seemed as if there were no subcutaneous fat. It appeared in two brothers, children of healthy parents, and it was found that it had affected the maternal grandmother and her eldest son while another son was affected with varicose veins in the legs. Tobiesen describes the condition as a hyperplasia and œdema of the skin and subcutaneous tissue, and gives an account of the more important papers on the subject. Photographs of the children are given.

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